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G11 Adv Term 1 (2024-25)
End of Term (EoT) Questions

Justin Dsouza

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G11 Adv Term 1

Part 1: FRQ & Part 2 MCQ

EoT1 2024-25

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Number of MCQ عدد الأسئلة الموضوعية	15
Marks of MCQ درجة الأسئلة الموضوعية	4
Number of FRQ عدد الأسئلة المقالية	5
Marks per FRQ الدرجات للأسئلة المقالية	5-12
Type of All Questions نوع كافة الأسئلة	الأسئلة الموضوعية /MCQ
	الأسئلة المقالية /FRQ
Maximum Overall Grade الدرجة القصوى الممكنة	100
Exam Duration - مدة الامتحان	150 minutes
Mode of Implementation -طريقة التطبيق	SwiftAssess & Paper-Based
Calculator	Allowed
الآلة الحاسبة	مسموحة

SCAN ME

Question* السؤال*	Lesson** الدرس**	Reference(s) in the Student Book (Arabic Version) المرجع في كتاب الطالب (النسخة العربية)	
		Example/Exercise مثال/تمرين	Page الصفحة
FRQ - الأسئلة المقالية			
1	Evaluate expressions involving the natural base and natural logarithm	13-15	237-238
2	Solve problems involving exponential growth and decay	1-5	301
3	Graph rational functions with oblique asymptotes and point discontinuity	11-16	344
4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414
5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

SCAN ME

Question* السؤال*	Lesson** الدرس**	Reference(s) in the Student Book (Arabic Version) المرجع في كتاب الطالب (النسخة العربية)	
		Example/Exercise مثال/تمرين	Page الصفحة
6	Graph exponential growth functions	17-26	222
7	Write logarithmic expressions in exponential form and write exponential expressions in logarithmic form	1-12	265
8	Solve logarithmic equations using the properties of logarithms	7-24 & 27-42	273-274
9	Solve exponential equations and inequalities using common logarithms	9-20	281
10	Simplify rational expressions by multiplying and dividing	45-53	318
11	Add and subtract rational expressions	38-50	325
12	Determine properties of reciprocal functions	1-16	333

Question* السؤال*	Lesson** الدرس**	Reference(s) in the Student Book (Arabic Version) المرجع في كتاب الطالب (النسخة العربية)	
		Example/Exercise مثال/تمرين	Page الصفحة
13	Solve rational inequalities	19-37	362-363
14	Classify and analyze samples	1-10 & 21-23	375 & 377
15	Find and compare experimental and theoretical probabilities	1-5	383
16	Describe a data distribution by its center, spread, and overall shape	1-6	391
17	Find the area under normal distribution curves	1-13	401
18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422
19	Find values of trigonometric ratios	1-12	431
20	Describe and graph the sine, cosine, and tangent functions	5-16	451

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G11 Adv Term 1

Part 1:Writing (FRQ)

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Grade 11Adv

EoT1 2024-25

Question 1

Evaluate expressions involving the natural base and natural logarithm

Page 237 - 238

Exercise 13 - 15

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1	Evaluate expressions involving the natural base and natural logarithm	13-15	237-238

13. **COMPOUND INTEREST** Ryan invested $5000 in an account that grows continuously at an annual rate of 2.5%.

a. Write the function that represents the situation, where A is the value of Ryan's investment after t years.

SCAN ME

1	Evaluate expressions involving the natural base and natural logarithm	13-15	237-238

13. **COMPOUND INTEREST** Ryan invested $5000 in an account that grows continuously at an annual rate of 2.5%.

b. What will Ryan's investment will be worth after 7 years?

SCAN ME

1	Evaluate expressions involving the natural base and natural logarithm	13-15	237-238

14. SAVINGS Jariah invested $6500 in a savings account that grows continuously at an annual rate of 3.25%.

a. Write the function that represents the situation, where A is the value of Jariah's investment after t years.

SCAN ME

1	Evaluate expressions involving the natural base and natural logarithm	13-15	237-238

14. SAVINGS Jariah invested $6500 in a savings account that grows continuously at an annual rate of 3.25%.

b. What will Jariah's investment will be worth after 18 years?

1	Evaluate expressions involving the natural base and natural logarithm	13-15	237-238

15. **INVESTMENTS** Marcella invested $12,750 in a company. Her investment has been growing continuously at an annual rate of 5.5%.

a. Write the function that represents the situation, where A is the value of Marcella's investment after t years.

SCAN ME

1	Evaluate expressions involving the natural base and natural logarithm	13-15	237-238

15. **INVESTMENTS** Marcella invested $12,750 in a company. Her investment has been growing continuously at an annual rate of 5.5%.

b. What will Marcella's investment will be worth after 9 years?

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Solve By Yourself

Any Questions/Doubts?
Ask them in the Comments!

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Question 2

Solve problems involving exponential growth and decay

Page 301

Exercise 1 - 5

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2	Solve problems involving exponential growth and decay	1-5	301

1. POPULATION In 2000, the world population was estimated to be 6.124 billion people. In 2005, it was 6.515 billion.

a. Write an exponential growth equation to represent the population y in billions t years after 2000.

SCAN ME

2	Solve problems involving exponential growth and decay	1-5	301

1. POPULATION In 2000, the world population was estimated to be 6.124 billion people. In 2005, it was 6.515 billion.

b. Use the equation to predict the year in which the world population reached 7.5 billion people.

SCAN ME

2	Solve problems involving exponential growth and decay	1-5	301

2. CONSUMER AWARENESS Jason wants to buy a new HD television but he thinks that if he waits, the quality of HD televisions will improve. The television he wants to buy costs $2500 now, and based on pricing trends, Jason thinks that the price will increase by 4% each year.

a. Write an exponential growth equation to represent the price y of a new HD television t years from now.

2	Solve problems involving exponential growth and decay	1-5	301

2. CONSUMER AWARENESS Jason wants to buy a new HD television but he thinks that if he waits, the quality of HD televisions will improve. The television he wants to buy costs $2500 now, and based on pricing trends, Jason thinks that the price will increase by 4% each year.

b. Use the equation to predict when a new HD television will cost $3000.

2	Solve problems involving exponential growth and decay	1-5	301

2. **CONSUMER AWARENESS** Jason wants to buy a new HD television but he thinks that if he waits, the quality of HD televisions will improve. The television he wants to buy costs $2500 now, and based on pricing trends, Jason thinks that the price will increase by 4% each year.

c. Jason decides to wait to buy a new television and saves his money. He puts $2200 in a savings account with 4.7% annual interest compounded continuously. Determine when the amount in his savings will exceed the cost of a new television.

2	Solve problems involving exponential growth and decay	1-5	301

3. **REASONING** A radioactive substance has a half-life of 32 years.

a. Determine the value of k and the equation of decay for this radioactive substance.

2	Solve problems involving exponential growth and decay	1-5	301

3. **REASONING** A radioactive substance has a half-life of 32 years.

b. How much of a 5-gram sample of the radioactive substance should be left after 100 years?

SCAN ME

2	Solve problems involving exponential growth and decay	1-5	301

4. CARBON DATING Carbon-14 has a decay constant k of 0.00012. Use this information to determine the age of the objects based on the amount of Carbon-14.

a. a fossil that has lost 95% of its Carbon-14

SCAN ME

2	Solve problems involving exponential growth and decay	1-5	301

4. CARBON DATING Carbon-14 has a decay constant k of 0.00012. Use this information to determine the age of the objects based on the amount of Carbon-14.

b. an animal skeleton that has 95% of its Carbon-14 remaining

SCAN ME

2	Solve problems involving exponential growth and decay	1-5	301

5. HALF-LIFE Archeologists uncover an ancient wooden tool. They analyze the tool and find that it has 22% as much Carbon-14 compared to the likely amount that it contained when it was made. Given that the decay constant of Carbon-14 is 0.00012, about how old is the artifact?

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Question 3

Graph rational functions with oblique asymptotes and point discontinuity

Page 344
Exercise 11 - 16

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3	Graph rational functions with oblique asymptotes and point discontinuity	11-16	344

Find the zeros and asymptotes of each function. Then graph each function.

11. $f(x) = \dfrac{(x-4)^2}{x+2}$

SCAN ME

3	Graph rational functions with oblique asymptotes and point discontinuity	11-16	344

Find the zeros and asymptotes of each function. Then graph each function.

12. $f(x) = \dfrac{(x+3)^2}{x-5}$

SCAN ME

3	Graph rational functions with oblique asymptotes and point discontinuity	11-16	344

Find the zeros and asymptotes of each function. Then graph each function.

13. $f(x) = \dfrac{6x^2 + 4x + 2}{x + 2}$

SCAN ME

3	Graph rational functions with oblique asymptotes and point discontinuity	11-16	344

Find the zeros and asymptotes of each function. Then graph each function.

14. $f(x) = \dfrac{2x^2 + 7x}{x - 2}$

SCAN ME

3	Graph rational functions with oblique asymptotes and point discontinuity	11-16	344

Find the zeros and asymptotes of each function. Then graph each function.

15. $f(x) = \dfrac{3x^2 + 8}{2x - 1}$

SCAN ME

3	Graph rational functions with oblique asymptotes and point discontinuity	11-16	344

Find the zeros and asymptotes of each function. Then graph each function.

16. $f(x) = \dfrac{2x^2 + 5}{3x + 4}$

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Question 4

Find the area under normal distribution curves & Find probabilities for normal distributions and find data values given probabilities

Page 401 & 414

Exercise 4-13 & 10

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4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

Identify the random variable in each distribution, and classify it as *discrete* or *continuous*. Explain your reasoning.

1. the number of texts received per week

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

Identify the random variable in each distribution, and classify it as *discrete* or *continuous*. Explain your reasoning.

2. the number of “likes” for a Web page

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

Identify the random variable in each distribution, and classify it as *discrete* or *continuous*. Explain your reasoning.

3. the height of a plant after a specific amount of time

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

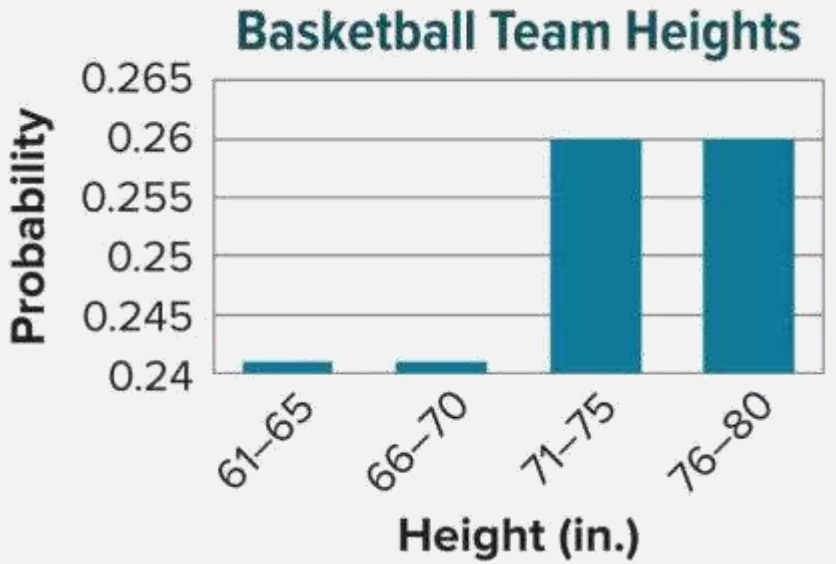
4. **FUNDRAISING** At a fundraising dinner, the underside of 200 plates were randomly tagged with a sticker to indicate winning a cash prize. The frequency table shows the number of winning plates for each prize. Construct a relative frequency table, and graph the probability distribution.

Prize, (X)	Frequency
$5	150
$50	40
$100	9
$1000	1

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

5. BASKETBALL An athletic director made a probability distribution of the heights of her team's basketball players, and distributed a flyer that claimed that the majority of the players on the basketball team are 71 inches or taller. Identify any flaws in the representation of the probability distribution.



SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

6. **TRACK** The preliminary times for a 110-meter hurdles race are shown. Create a histogram of the set of data. Determine whether the data can be approximated with a normal distribution.

Times (seconds)
14.75, 14.77, 14.31, 14.83, 14.84, 14.35, 14.69, 14.63, 14.74, 14.82, 14.25, 14.93

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

7. A normal distribution has a mean of 186.4 and a standard deviation of 48.9.

a. What range of values represents the middle 99.7% of the data?

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

7. A normal distribution has a mean of 186.4 and a standard deviation of 48.9.

b. What percent of data will be greater than 235.3?

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

7. A normal distribution has a mean of 186.4 and a standard deviation of 48.9.

c. What range of values represents the upper 2.5% of the data?

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

Find the *z*-value for each standard normal distribution.

8. $\sigma = 9.8$, $X = 55.4$, and $\mu = 68.34$

9. $\sigma = 11.6$, $X = 42.80$, and $\mu = 68.2$

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

Find the *z*-value for each standard normal distribution.

10. $\sigma = 11.9$, $X = 119.2$, and $\mu = 112.4$

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

Use a table to find the area under the normal curve for each interval.

11. $z > 0.58$

12. $z < -1.56$

13. $-2.29 < z < 2.76$

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

10. OPEN RESPONSE A normal distribution has a mean of 347.2 and a standard deviation of 13.9. (Lesson 8-4)

Part A What percent of the data is less than 319.4?

SCAN ME

4	Find the area under normal distribution curves Find probabilities for normal distributions and find data values given probabilities	4-13 & 10	401&414

10. **OPEN RESPONSE** A normal distribution has a mean of 347.2 and a standard deviation of 13.9. (Lesson 8-4)

Part B What percent of the data is greater than 361.1?

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Question 5

Identify the unit circle and trigonometric ratios & Use the properties of periodic functions to evaluate trigonometric functions

Page 443 - 444

Exercise 35 - 40

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5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

35. CONSTRUCT ARGUMENTS Determine whether each statement is *always*, *sometimes*, or *never* true. Justify your argument.

a. If k is a real number, then there is a value of θ such that $\cos \theta = k$.

b. $\sin \theta = \sin (\theta + 2\pi)$

SCAN ME

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

35. CONSTRUCT ARGUMENTS Determine whether each statement is *always*, *sometimes*, or *never* true. Justify your argument.

c. If $\theta = n\pi$, where n is a whole number, then $\cos \theta = 1$.

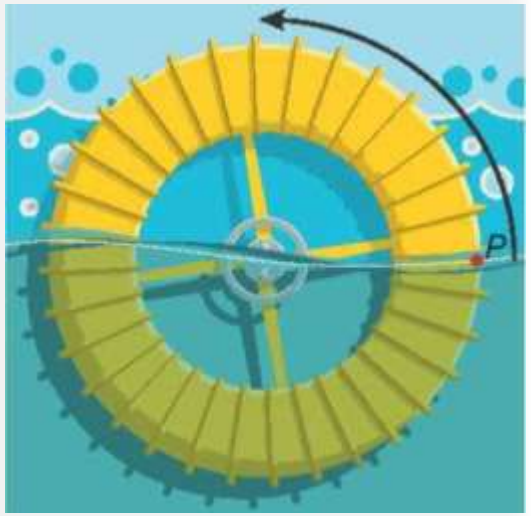
d. If θ is an angle in standard position in which the terminal side lies in Quadrant IV, then $\sin \theta$ is positive.

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

36. **REASONING** Point P lies on the unit circle and on the line $y = x$. If θ is an angle in standard position in which the terminal side contains P, what can you conclude about $\sin \theta$ and $\cos \theta$? Explain.

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

37. **USE A MODEL** The wheel at a water park has a radius of 1 meter. As the water flows, the wheel turns counterclockwise, as shown. A point P on the edge of the wheel begins at the surface of the water. The function $f(x) = \sin x$ represents the height of P above or below the surface of the water as the wheel rotates through an angle of x radians.

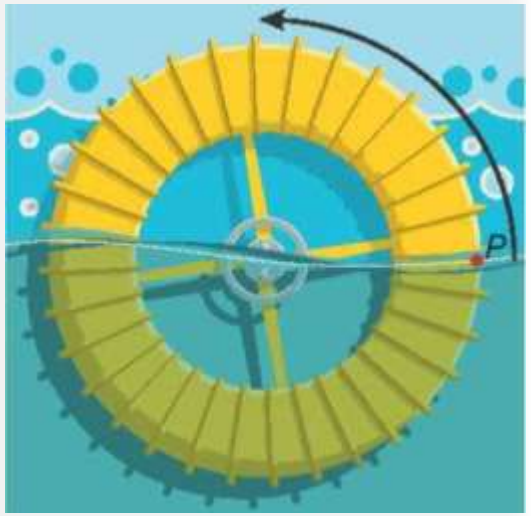


a. How far does point P travel as the wheel rotates through an angle of $\frac{3\pi}{4}$ radians? Explain.

SCAN ME

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

37. **USE A MODEL** The wheel at a water park has a radius of 1 meter. As the water flows, the wheel turns counterclockwise, as shown. A point P on the edge of the wheel begins at the surface of the water. The function $f(x) = \sin x$ represents the height of P above or below the surface of the water as the wheel rotates through an angle of x radians.

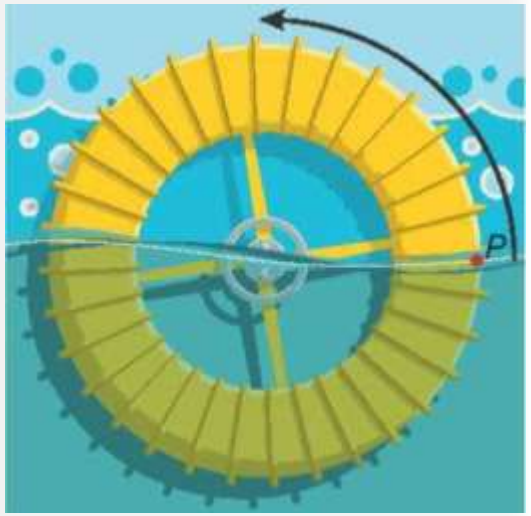


b. Graph $f(x) = \sin x$ on the coordinate plane.

SCAN ME

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

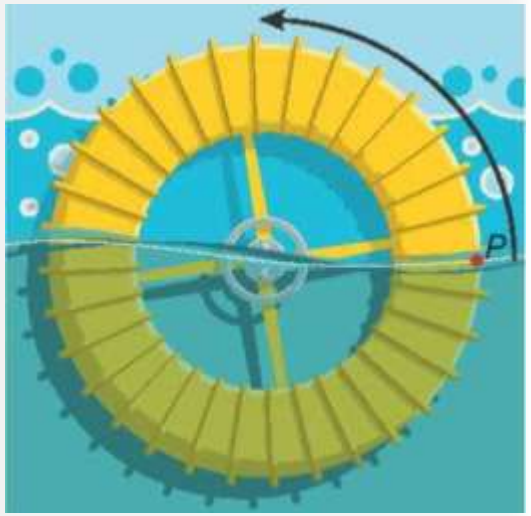
37. **USE A MODEL** The wheel at a water park has a radius of 1 meter. As the water flows, the wheel turns counterclockwise, as shown. A point P on the edge of the wheel begins at the surface of the water. The function $f(x) = \sin x$ represents the height of P above or below the surface of the water as the wheel rotates through an angle of x radians.



c. What is the period of the function? Explain how you know, and explain how the period is shown in the graph. What does the period tell you about point P?

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

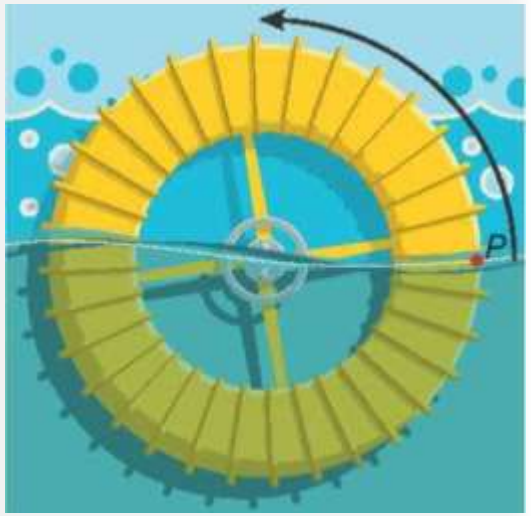
37. **USE A MODEL** The wheel at a water park has a radius of 1 meter. As the water flows, the wheel turns counterclockwise, as shown. A point P on the edge of the wheel begins at the surface of the water. The function $f(x) = \sin x$ represents the height of P above or below the surface of the water as the wheel rotates through an angle of x radians.



d. What are the x-intercepts? What do these represent?

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

37. **USE A MODEL** The wheel at a water park has a radius of 1 meter. As the water flows, the wheel turns counterclockwise, as shown. A point P on the edge of the wheel begins at the surface of the water. The function $f(x) = \sin x$ represents the height of P above or below the surface of the water as the wheel rotates through an angle of x radians.



e. Identify an interval where the function is decreasing. What does this represent?

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

38. TIRES A point on the edge of a car tire is marked with paint. As the car moves slowly, the marked point on the tire varies in distance from the surface of the road. The height in inches of the point is given by the function $h = -8 \cos t + 8$, where t is the time in seconds.

a. What is the maximum height above ground that the point on the tire reaches?

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

38. TIRES A point on the edge of a car tire is marked with paint. As the car moves slowly, the marked point on the tire varies in distance from the surface of the road. The height in inches of the point is given by the function $h = -8 \cos t + 8$, where t is the time in seconds.

b. What is the minimum height above ground that the point on the tire reaches?

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

38. TIRES A point on the edge of a car tire is marked with paint. As the car moves slowly, the marked point on the tire varies in distance from the surface of the road. The height in inches of the point is given by the function $h = -8 \cos t + 8$, where t is the time in seconds.

c. How many rotations does the tire make per second?

SCAN ME

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

38. TIRES A point on the edge of a car tire is marked with paint. As the car moves slowly, the marked point on the tire varies in distance from the surface of the road. The height in inches of the point is given by the function $h = -8 \cos t + 8$, where t is the time in seconds.

d. How far does the marked point travel in 30 seconds? How far does the marked point travel in one hour?

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

39. **TEMPERATURES** The temperature T in degrees Fahrenheit of a city t months into the year is approximated by the formula $T = 42 + 30 \sin \frac{\pi}{6}t$.

a. What is the highest monthly temperature for the city?

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

39. **TEMPERATURES** The temperature T in degrees Fahrenheit of a city t months into the year is approximated by the formula $T = 42 + 30 \sin \frac{\pi}{6}t$.

b. In what month does the highest temperature occur?

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

39. **TEMPERATURES** The temperature T in degrees Fahrenheit of a city t months into the year is approximated by the formula $T = 42 + 30 \sin \frac{\pi}{6}t$.

c. What is the lowest monthly temperature for the city?

SCAN ME

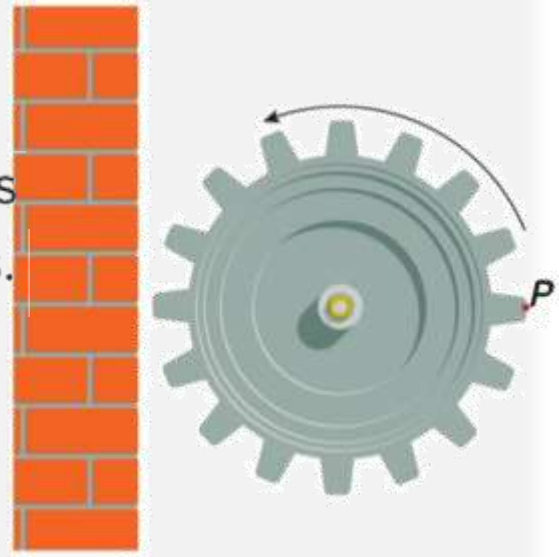
5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

39. **TEMPERATURES** The temperature T in degrees Fahrenheit of a city t months into the year is approximated by the formula $T = 42 + 30 \sin \frac{\pi}{6}t$.

d. In what month does the lowest temperature occur?

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

40. **FACTORIES** A machine in a factory has a gear with a radius of 1 foot. A point P on the edge of the gear begins at the furthest point from a wall, and then the gear begins to rotate counterclockwise. The function $f(x) = \cos x + 2$ represents the distance of P from the wall as the gear rotates through an angle of x radians.



a. What is $f\left(\frac{\pi}{2}\right)$? What does it represent?

SCAN ME

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

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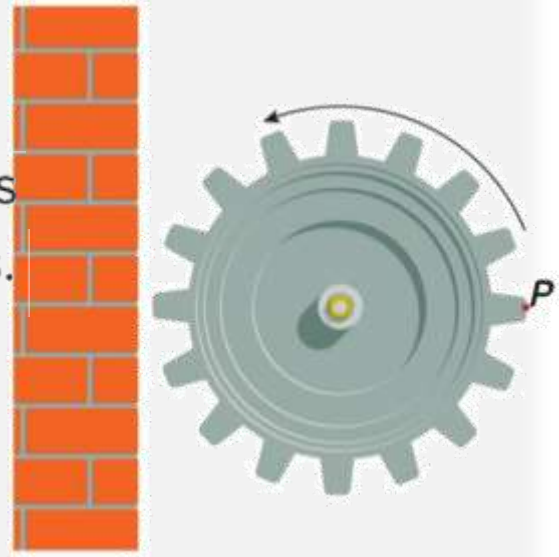

b. Graph $f(x)$ on a coordinate plane.

SCAN ME

5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

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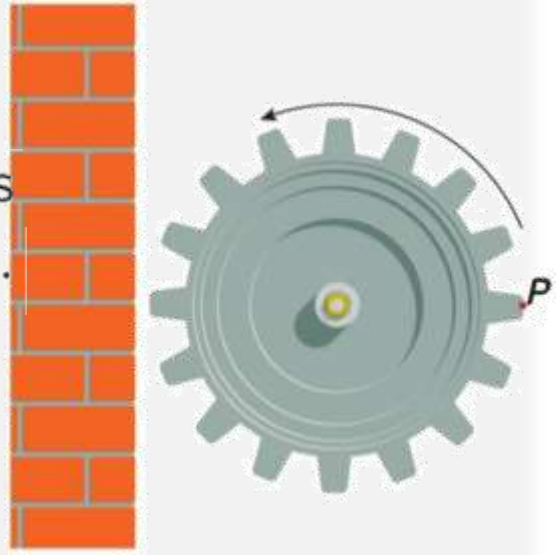
c. What is the period of the function? What does this tell you about P?



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5	Identify the unit circle and trigonometric ratios Use the properties of periodic functions to evaluate trigonometric functions	35-40	443-444

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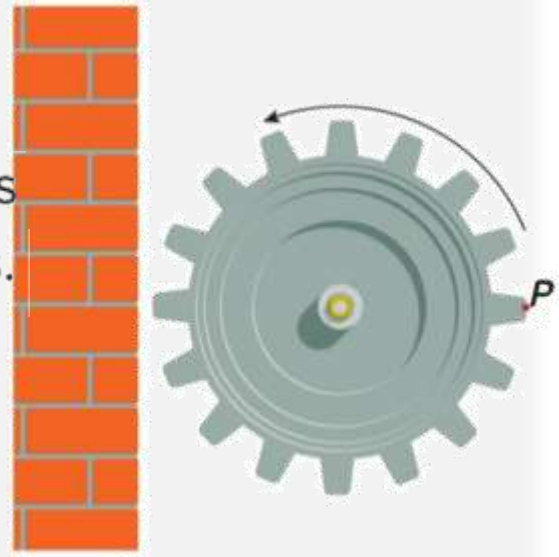
d. What are the maximum and minimum values of the function?



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Part 2: MCQ

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Question 6

Graph exponential growth functions

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Exercise 17 - 26

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Determine whether each function represents *exponential growth* or *exponential decay*.

17. $f(x) = 7^x$

18. $g(x) = 0.99^x$

19. $h(x) = \left(\frac{2}{3}\right)^x$

20. $j(x) = \left(\frac{5}{4}\right)^x$

21. $k(x) = 0.75^x$

22. $m(x) = 1.02^x$

SCAN ME

Graph each function. Find the domain, range, *y*-intercept, asymptote, and end behavior.

23. $f(x) = 0.25^x$

Graph each function. Find the domain, range, *y*-intercept, asymptote, and end behavior.

24. $f(x) = 0.8^x$

Graph each function. Find the domain, range, *y*-intercept, asymptote, and end behavior.

25. $f(x) = \left(\frac{1}{2}\right)^x$

SCAN ME

6	Graph exponential growth functions	17-26	222

Graph each function. Find the domain, range, *y*-intercept, asymptote, and end behavior.

26. $f(x) = \left(\frac{2}{3}\right)^x$

SCAN ME

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Question 7

Write logarithmic expressions in exponential form and write exponential expressions in logarithmic form

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Exercise 1 - 12

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7	Write logarithmic expressions in exponential form and write exponential expressions in logarithmic form	1-12	265

Write each equation in exponential form.

1. $\log_{15} 225 = 2$

2. $\log_3 \frac{1}{27} = -3$

3. $\log_5 \frac{1}{25} = 2$

Write each equation in exponential form.

4. $\log_3 243 = 5$

5. $\log_4 64 = 3$

6. $\log_4 32 = \frac{5}{2}$

7	Write logarithmic expressions in exponential form and write exponential expressions in logarithmic form	1-12	265

Write each equation in logarithmic form.

7. $2^7 = 128$

8. $3^{-4} = \frac{1}{81}$

9. $7^{-2} = \frac{1}{49}$

SCAN ME

7	Write logarithmic expressions in exponential form and write exponential expressions in logarithmic form	1-12	265

Write each equation in logarithmic form.

10. $\left(\frac{1}{7}\right)^3 = \frac{1}{343}$

11. $2^9 = 512$

12. $64^{\frac{2}{3}} = 16$

SCAN ME

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Question 8

Solve logarithmic equations using the properties of logarithms

Page 273-274

Exercise 7-24 & 27-42

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8	Solve logarithmic equations using the properties of logarithms	7-24 & 27-42	273-274

Solve each equation.

7. $\log_4 (2x^2 - 4) = \log_4 2x$

8. $\log_5 (x^2 - 6) = \log_5 x$

9. $\log_3 (x^2 - 8) = \log_3 2x$

10. $\log_4 (2x^2 - 20) = \log_4 6x$

11. $\log_2 (6x^2 + 1) = \log_2 5x$

12. $\log_6 (6x^2 - 3) = \log_6 7x$

SCAN ME

8	Solve logarithmic equations using the properties of logarithms	7-24 & 27-42	273-274

Use $\log_4 2 = 0.5$, $\log_4 3 \approx 0.7925$, and $\log_4 5 \approx 1.1610$ to approximate the value of each expression.

13. $\log_4 30$

14. $\log_4 20$

15. $\log_4 \frac{2}{3}$

16. $\log_4 \frac{4}{3}$

17. $\log_4 9$

18. $\log_4 8$

SCAN ME

8	Solve logarithmic equations using the properties of logarithms	7-24 & 27-42	273-274

Use $\log_2 3 \approx 1.5850$ and $\log_2 5 \approx 2.3219$ to approximate the value of each expression.

19. $\log_2 25$

20. $\log_2 27$

21. $\log_2 125$

22. $\log_2 625$

23. $\log_2 81$

24. $\log_2 243$

SCAN ME

8	Solve logarithmic equations using the properties of logarithms	7-24 & 27-42	273-274

Solve each equation. Check your solution.

27. $\log_3 56 - \log_3 n = \log_3 7$

28. $\log_2 (4x) + \log_2 5 = \log_2 40$

SCAN ME

8	Solve logarithmic equations using the properties of logarithms	7-24 & 27-42	273-274

Solve each equation. Check your solution.

29. $5 \log_2 x = \log_2 32$

30. $\log_{10} a + \log_{10} (a + 21) = \log_{10} 100$

SCAN ME

8	Solve logarithmic equations using the properties of logarithms	7-24 & 27-42	273-274

Solve each equation. Check your solution.

31. $\log_2 x + \log_2 (x + 2) = \log_2 8$

32. $\log_4 (x^2 + 2x + 1) = \log_4 (11 - x)$

8	Solve logarithmic equations using the properties of logarithms	7-24 & 27-42	273-274

Solve each equation. Check your solution.

33. $\log_3 \frac{x^2}{4} = \log_3 25$

34. $\log_3 3d = \log_3 9$

SCAN ME

8	Solve logarithmic equations using the properties of logarithms	7-24 & 27-42	273-274

Solve each equation. Check your solution.

35. $\log_{10}(3x^2 - 5x) = \log_{10} 2$

36. $\log_4(2x^2 - 3x) = \log_4 2$

SCAN ME

Use $\log_5 3 \approx 0.6826$ and $\log_5 4 \approx 0.8614$ to approximate the value of each expression.

37. $\log_5 40$

38. $\log_5 30$

39. $\log_5 \frac{3}{4}$

40. $\log_5 \frac{4}{3}$

41. $\log_5 9$

42. $\log_5 16$

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Question 9

Solve exponential equations and inequalities using common logarithms

Page 281
Exercise 9 - 20

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Solve each equation. Round to the nearest ten-thousandth.

9. $4^{5k} = 37$

10. $8^{p} = 50$

11. $7^{y} = 15$

12. $5^{4x-2} = 120$

13. $6^{x+2} = 18$

14. $2.4^{x+4} = 30$

SCAN ME

Solve each inequality. Round to the nearest ten-thousandth.

15. $7^{3x-1} \geq 21$

16. $6.5^{2x} \geq 200$

17. $3^x > 243$

18. $16^v \leq \frac{1}{4}$

19. $8^{y+4} > 15$

20. $2^x < 25$

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Question 10

Simplify rational expressions by multiplying and dividing

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Exercise 45 - 53

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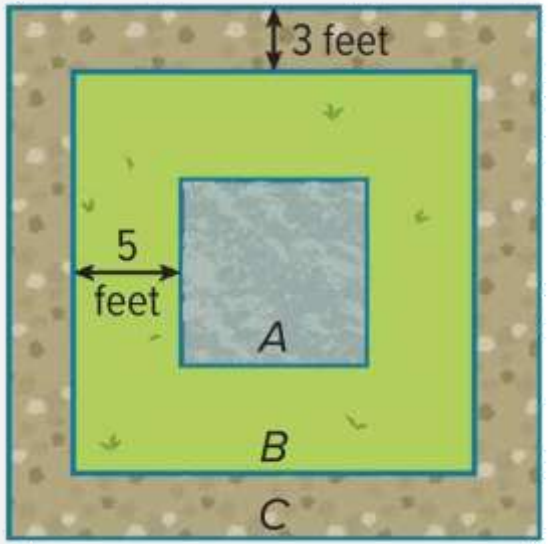
10	Simplify rational expressions by multiplying and dividing	45-53	318

45. **USE A MODEL** Anita's yard is being professionally landscaped. The final design will consist of a circular fountain x feet in diameter in square A surrounded by a grassy area in square B and a gravel pathway in square C that borders the grassy area. The square areas will be centered on each other as shown in the diagram. Square A will have a side length of $2x$ feet.

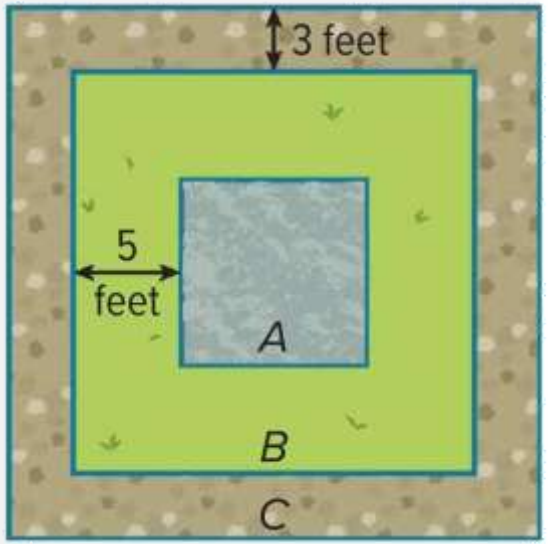


a. Anita would like the lengths of the sides to be proportional. For what values of x will the ratio of the lengths of a side of square C to a side of square B equal the ratio of the lengths of a side of square B to a side of square A? Explain your reasoning.

What diameter could the fountain have?

10	Simplify rational expressions by multiplying and dividing	45-53	318

45. **USE A MODEL** Anita's yard is being professionally landscaped. The final design will consist of a circular fountain x feet in diameter in square A surrounded by a grassy area in square B and a gravel pathway in square C that borders the grassy area. The square areas will be centered on each other as shown in the diagram. Square A will have a side length of $2x$ feet.



b. If the landscape architect changed the width of the gravel pathway to 4 feet and the width of the grassy area to 2 feet, is there a value for x that would make the ratios equal? Explain your reasoning. What diameter could the fountain have?

SCAN ME

46. **ANALYZE** Compare and contrast $\frac{(x-6)(x+2)(x+3)}{x+3}$ and $(x-6)(x+2)$.

47. FIND THE ERROR Troy and Beverly are simplifying $\frac{x+y}{x-y} \div \frac{4}{y-x}$. Is either of them correct? Explain your reasoning.

Troy

$$\frac{x+y}{x-y} \div \frac{4}{y-x} = \frac{x-y}{x+y} \cdot \frac{4}{y-x}$$
$$= \frac{-4}{x+y}$$

Beverly

$$\frac{x+y}{x-y} \div \frac{4}{y-x} = \frac{x+y}{x-y} \cdot \frac{y-x}{4}$$
$$= -\frac{x+y}{4}$$

SCAN ME

10	Simplify rational expressions by multiplying and dividing	45-53	318

48. **PERSEVERE** Find the expression that makes the following statement true for all values of x within the doman.

$$\frac{x-6}{x+3} \cdot \frac{?}{x-6} = x-2$$

10	Simplify rational expressions by multiplying and dividing	45-53	318

49. WHICH ONE DOESN'T BELONG? Identify the expression that does not belong with the other three. Justify your conclusion.

$\frac{1}{x-1}$

$\frac{x^2+3x+2}{x-5}$

$\frac{x+1}{\sqrt{x+3}}$

$\frac{x^2+1}{3}$

SCAN ME

10	Simplify rational expressions by multiplying and dividing	45-53	318

50. **ANALYZE** Determine whether the following statement is *sometimes*, *always*, or *never* true. Justify your argument.

A rational function that has a variable in the denominator is defined for all real values of x.

10	Simplify rational expressions by multiplying and dividing	45-53	318

51. **CREATE** Write a rational expression that simplifies to $\frac{x-1}{x+4}$.

52. **WRITE** The rational expression $\frac{x^2 + 3x}{4x}$ is simplified to $\frac{x + 3}{4}$. Explain why this new expression is not defined for all values of x.

10	Simplify rational expressions by multiplying and dividing	45-53	318

53. **CREATE** Write three different rational expressions that are equivalent to the expression $\frac{a}{a-5}$, $a \neq 5$.

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Question 11

Add and subtract rational expressions

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Exercise 38 - 50

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11	Add and subtract rational expressions	38-50	325

Simplify each expression.

38. $\frac{1}{12a} + 6 - \frac{3}{5a^2}$

39. $\frac{5}{16y^2} - 4 - \frac{8}{3x^2y}$

Simplify each expression.

40. $\frac{5}{6x^2 + 46x - 16} + \frac{2}{6x^2 + 57x + 72}$

41. $\frac{1}{8x^2 - 20x - 12} + \frac{4}{6x^2 + 27x + 12}$

Simplify each expression.

42. $\dfrac{x^2+y^2}{x^2-y^2}+\dfrac{y}{x+y}-\dfrac{x}{x-y}$

43. $\dfrac{x^2+x}{x^2-9x+8}+\dfrac{4}{x-1}-\dfrac{3}{x-8}$

11	Add and subtract rational expressions	38-50	325

Simplify each expression.

44. $\dfrac{\dfrac{2}{a-1}+\dfrac{3}{a-4}}{\dfrac{6}{a^2-5a+4}}$

45. $\dfrac{\frac{1}{x}+\frac{1}{y}}{\left(\frac{1}{x}-\frac{1}{y}\right)(x+y)}$

SCAN ME

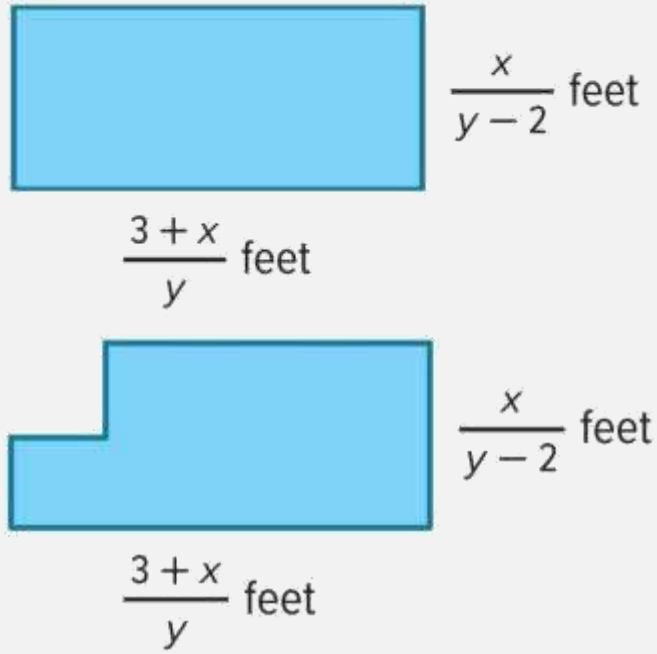
Find the slope of the line that passes through each pair of points.

46. $A\left(\frac{2}{p}, -\frac{1}{2}\right)$ and $B\left(\frac{1}{3}, \frac{3}{p}\right)$

47. $C\left(\frac{1}{4}, \frac{4}{q}\right)$ and $D\left(\frac{5}{q}, \frac{1}{5}\right)$

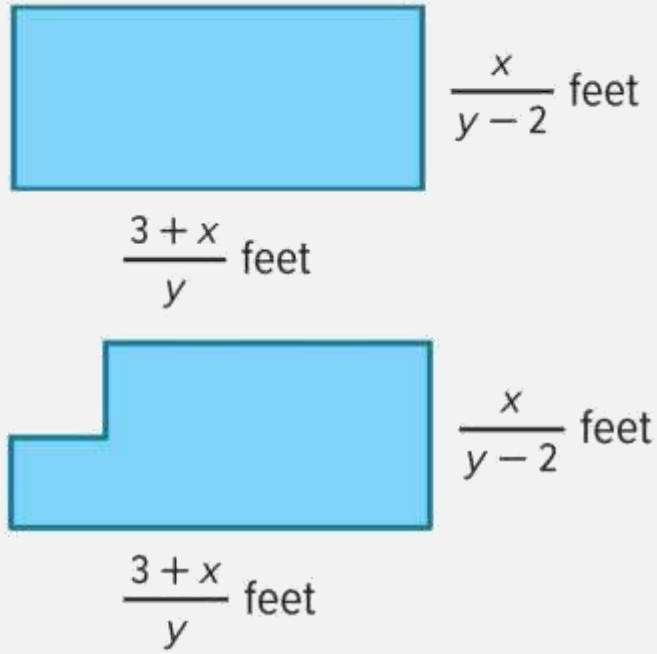
48. USE A MODEL Hachi needs to buy fencing for her rectangular garden.

a. Write an expression, in simplest form, that represents the number of feet of fencing Hachi needs. Are there any restrictions on the variables? Explain.



48. USE A MODEL Hachi needs to buy fencing for her rectangular garden.

b. Hachi wants to remove a square corner from her garden. The square section removed will have sides the length of half the width of the original garden. What expression represents the perimeter of the new garden? Explain.



SCAN ME

49. STRUCTURE Determine the average of three rational numbers represented by these rational expressions: $\frac{1}{x}$, $\frac{1}{x-3}$, and $\frac{1}{2x}$ for $x \neq 3$, and $x \neq 0$. Explain how you found the average.

50. **ELECTRONICS** A resistor is an electrical component that reduces the flow of electrical current through a circuit. A resistor is connected in parallel when both of its terminals are connected to both terminals of an adjacent resistor. When three resistors are connected in parallel, the total resistance, R_T, is given by $R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$.

a. Simplify the complex fraction. Explain how you know your result is simplified as much as possible.

50. **ELECTRONICS** A resistor is an electrical component that reduces the flow of electrical current through a circuit. A resistor is connected in parallel when both of its terminals are connected to both terminals of an adjacent resistor. When three resistors are connected in parallel, the total resistance, R_T, is given by $R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$.

b. Timothy found this formula for total resistance, $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$. He said that this formula is equivalent to the original formula. Is Timothy correct? Explain.

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Question 12

Determine properties of reciprocal functions

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Exercise 1 - 16

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Determine the excluded value of x for each function.

1. $f(x) = \frac{5}{x}$

2. $g(x) = \frac{-2}{x + 2}$

3. $f(x) = \frac{10}{x - 3}$

4. $g(x) = \frac{5}{-6x}$

5. $f(x) = \frac{5}{2x + 3}$

6. $g(x) = \frac{5}{7x - 9}$

12	Determine properties of reciprocal functions	1-16	333

Identify the asymptotes, domain, and range of each function. Then graph the function and identify its intercepts.

7. $f(x) = \frac{1}{x-1}$

SCAN ME

12	Determine properties of reciprocal functions	1-16	333

Identify the asymptotes, domain, and range of each function. Then graph the function and identify its intercepts.

8. $f(x) = -\frac{1}{x} + 4$

12	Determine properties of reciprocal functions	1-16	333

Identify the asymptotes, domain, and range of each function. Then graph the function and identify its intercepts.

9. $f(x) = \frac{5}{x+4}$

SCAN ME

12	Determine properties of reciprocal functions	1-16	333

Identify the asymptotes, domain, and range of each function. Then graph the function and identify its intercepts.

10. $f(x) = \frac{6}{x} - 3$

SCAN ME

11. PLANES A plane is scheduled to leave Dallas for an 800-mile flight to Chicago's O'Hare airport. However, the departure is delayed for two hours.

a. If $t = 0$ represents the scheduled departure time, write a function that represents the plane's average speed r on the vertical axis as a function of travel time, t, which is based on the travel from the scheduled departure time to the destination. Graph the function.

11. **PLANES** A plane is scheduled to leave Dallas for an 800-mile flight to Chicago's O'Hare airport. However, the departure is delayed for two hours.

b. Analyze the key features of the graph in the context of the situation.

12	Determine properties of reciprocal functions	1-16	333

12. **COMPUTERS** To manufacture a specific model of computer, a company pays $5000 for rent and overhead and $435 per computer for parts.

a. Write the function relating the average cost to make a computer C to how many computers n are being made. Graph the function.

12	Determine properties of reciprocal functions	1-16	333

12. COMPUTERS To manufacture a specific model of computer, a company pays $5000 for rent and overhead and $435 per computer for parts.

b. Analyze the key features of the graph.

SCAN ME

12	Determine properties of reciprocal functions	1-16	333

Graph each function. State the domain and range.

13. $f(x) = \frac{1}{x+3} - 3$

12	Determine properties of reciprocal functions	1-16	333

Graph each function. State the domain and range.

14. $f(x) = \frac{-1}{x+5} - 6$

12	Determine properties of reciprocal functions	1-16	333

Graph each function. State the domain and range.

15. $f(x) = \frac{-1}{x+1} + 3$

12	Determine properties of reciprocal functions	1-16	333

Graph each function. State the domain and range.

16. $f(x) = \frac{1}{x+4} - 2$

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Question 13

Solve rational inequalities

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Exercise 19 - 37

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13	Solve rational inequalities	19-37	362-363

Solve each inequality. Check your solutions.

19. $3 - \frac{4}{x} > \frac{5}{4x}$

20. $\frac{5}{3a} - \frac{3}{4a} > \frac{5}{6}$

SCAN ME

13	Solve rational inequalities	19-37	362-363

Solve each inequality. Check your solutions.

21. $\frac{x-2}{x+2} + \frac{1}{x-2} > \frac{x-4}{x-2}$

22. $\frac{3}{4} - \frac{1}{x-3} > \frac{x}{x+4}$

SCAN ME

13	Solve rational inequalities	19-37	362-363

Solve each inequality. Check your solutions.

23. $\frac{x}{5} + \frac{2}{3} < \frac{3}{x-4}$

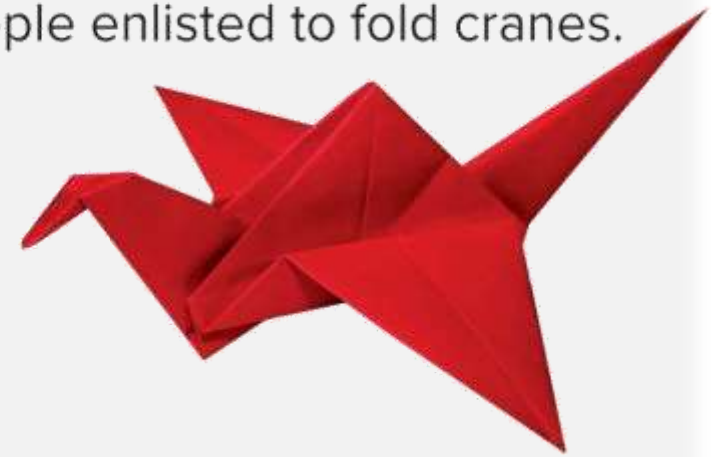
24. $\frac{x}{x+2} + \frac{1}{x-1} < \frac{3}{2}$

SCAN ME

13	Solve rational inequalities	19-37	362-363

25. ORIGAMI For prom, Muna wants to fold 1000 origami cranes. She is asking volunteers to help and does not want to make anyone fold more than 15 cranes.

a. Write an inequality to represent this situation, if N is the number of people enlisted to fold cranes.



SCAN ME

13	Solve rational inequalities	19-37	362-363

25. ORIGAMI For prom, Muna wants to fold 1000 origami cranes. She is asking volunteers to help and does not want to make anyone fold more than 15 cranes.

b. What is the minimum number of people that will satisfy the inequality in **part a**?

SCAN ME

13	Solve rational inequalities	19-37	362-363

26. PROM Caleb manages the budget for his school's junior prom. His class has spent $1250 for the prom venue, $625 for a DJ, and $1470 for decorations. They will also serve dinner before the dance, which costs $12 per student. If he wants to keep the cost of prom tickets less than $20, how many students will need to buy tickets?

SCAN ME

13	Solve rational inequalities	19-37	362-363

27. HEIGHT Fabiana is 8 inches shorter than her sister Pilar, or 12.5% shorter than Pilar. How tall is Fabiana?

SCAN ME

13	Solve rational inequalities	19-37	362-363

Solve each equation or inequality. Check your solutions.

28. $\frac{x-2}{x+4} > \frac{x+1}{x+10}$

29. $\frac{3}{k} - \frac{4}{3k} = 0$

13	Solve rational inequalities	19-37	362-363

Solve each equation or inequality. Check your solutions.

30. $2 - \frac{3}{v} = \frac{5}{v}$

31. $n + \frac{3}{n} < \frac{12}{n}$

SCAN ME

13	Solve rational inequalities	19-37	362-363

Solve each equation or inequality. Check your solutions.

32. $\frac{1}{2m} - \frac{3}{m} < -\frac{5}{2}$

33. $\frac{1}{2x} < \frac{2}{x} - 1$

SCAN ME

13	Solve rational inequalities	19-37	362-363

Solve each equation or inequality. Check your solutions.

34. $\frac{6}{x+2} = \frac{x-7}{x+2} + \frac{1}{4}$

35. $\frac{t-5}{t-3} = \frac{t-3}{t+3} + \frac{1}{t-3}$

SCAN ME

13	Solve rational inequalities	19-37	362-363

Solve each equation or inequality. Check your solutions.

36. $3 + \frac{2}{t} > \frac{8}{t}$

37. $\frac{6}{m+5} > 2$

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Question 14

Classify and analyze samples

Page 375 & 377

Exercise 1-10 & 21-23

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مدرسة العروبة للتعليم الثانوي
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Teacher

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14	Classify and analyze samples	1-10 & 21-23	375 & 377

Identify each sample, and suggest a population from which it was selected. Then classify the sample as *simple random*, *systematic*, *self-selected*, *convenience*, or *stratified*. Explain your reasoning.

1. Berton divides his sports T-shirts by team. Then he randomly selects four T-shirts from each team and records the size.

2. The project manager at a new business inspects every tenth smart phone produced to check that it is operating correctly.

SCAN ME

14	Classify and analyze samples	1-10 & 21-23	375 & 377

Identify each sample, and suggest a population from which it was selected. Then classify the sample as *simple random*, *systematic*, *self-selected*, *convenience*, or *stratified*. Explain your reasoning.

3. A grocery store manager asks its customers to submit suggestions for items on the salad bar during the week.

SCAN ME

Identify each sample or question as *biased* or *unbiased*. Explain your reasoning.

4. A random sample of eight people is asked to select their favorite food for a survey about Americans' food preferences.

5. Every tenth student at band camp is asked to name his or her favorite band for a survey about the campers.

SCAN ME

Identify each sample or question as *biased* or *unbiased*. Explain your reasoning.

6. Every fifth person entering a museum is asked to name his or her favorite type of book to read for a survey about reading interests of people in the city.

7. Do you think that the workout facility needs a new treadmill and racquetball court?

SCAN ME

14	Classify and analyze samples	1-10 & 21-23	375 & 377

Identify each sample or question as *biased* or *unbiased*. Explain your reasoning.

8. Which is your favorite type of music, pop, or country?

9. Are you a member of any after-school clubs?

SCAN ME

14	Classify and analyze samples	1-10 & 21-23	375 & 377

Identify each sample or question as *biased* or *unbiased*. Explain your reasoning.

10. Don't you agree that employees should pack their lunch?

SCAN ME

14	Classify and analyze samples	1-10 & 21-23	375 & 377

Classify each sample as *simple random*, *systematic*, *self-selected*, *convenience*, or *stratified*. Then determine whether each situation describes a *survey*, an *observational study*, or an *experiment*.

21. To determine the music preferences of their customers, the manager of a music store selected 10 customers in the store to participate in an interview.

SCAN ME

14	Classify and analyze samples	1-10 & 21-23	375 & 377

Classify each sample as *simple random*, *systematic*, *self-selected*, *convenience*, or *stratified*. Then determine whether each situation describes a *survey*, an *observational study*, or an *experiment*.

22. Administrators at a community library want to know the type of materials patrons are most likely to use. Every Friday, they record the type of media each patron uses.

SCAN ME

14	Classify and analyze samples	1-10 & 21-23	375 & 377

Classify each sample as *simple random*, *systematic*, *self-selected*, *convenience*, or *stratified*. Then determine whether each situation describes a *survey*, an *observational study*, or an *experiment*.

23. To determine whether the school should purchase new computer software, the technology team divides a group of 50 students into two groups by age. Half of the students from each age group are randomly selected to complete an activity using the current computer software, and the other half of the students from each group complete the same activity using the new computer software. The students' actions are recorded and analyzed.

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Question 15

Find and compare experimental and theoretical probabilities

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Exercise 1 - 5

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1. A student spun a spinner with 4 equal sections 100 times and recorded the results.

a. Find the theoretical probability of spinning blue. Write your answer as a percentage rounded to the nearest tenth, if necessary.

Spinner Section	Frequency
Red	35
Blue	38
Green	13
Yellow	14

SCAN ME

15	Find and compare experimental and theoretical probabilities	1-5	383

1. A student spun a spinner with 4 equal sections 100 times and recorded the results.

b. Find the experimental probability of spinning blue. Write your answer as a percentage rounded to the nearest tenth, if necessary.

Spinner Section	Frequency
Red	35
Blue	38
Green	13
Yellow	14

SCAN ME

2. A student flipped a coin 125 times and recorded the results.

Coin Result	Frequency
Heads	73
Tails	52

a. Find the theoretical probability of the coin landing on heads. Write your answer as a percentage rounded to the nearest tenth, if necessary.

SCAN ME

2. A student flipped a coin 125 times and recorded the results.

Coin Result	Frequency
Heads	73
Tails	52

b. Find the experimental probability of the coin landing on heads. Write your answer as a percentage rounded to the nearest tenth, if necessary.

3. A fair 6-sided die is rolled 150 times.

a. Find the theoretical probability of rolling a 3. Write your answer as a percentage rounded to the nearest tenth, if necessary.

Number on Die	Frequency
1	32
2	18
3	27
4	16
5	33
6	24

SCAN ME

3. A fair 6-sided die is rolled 150 times.

b. Find the experimental probability of rolling a 3. Write your answer as a percentage rounded to the nearest tenth, if necessary.

Number on Die	Frequency
1	32
2	18
3	27
4	16
5	33
6	24

4. **INTERNET** Tiana sells handmade earrings online. Last month she sold 60% of her inventory. Design and run a simulation that can be used to estimate the probability of selling inventory.

15	Find and compare experimental and theoretical probabilities	1-5	383

5. PROGRAMMING Lamar designed a soccer computer game. He coded the program such that a player will make a goal on 35% of the attempts. Paola is testing the game and thinks there may be an error in the game's programming. She attempted to make 30 goals and only 4 were successful. Run and evaluate a simulation, and decide whether Paola is correct.

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Question 16

Describe a data distribution by its center, spread, and overall shape

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Exercise 1 - 6

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16	Describe a data distribution by its center, spread, and overall shape	1-6	391

1. **BARBER** A barber wants to purchase new professional shears from a Web site. The prices of all of the shears are shown in the table. Use the standard deviation formula to find and interpret the standard deviation of the data. Round your answers to the nearest cent.

Cost of Shears ($)			
50	165	55	79
84	68	38	42

SCAN ME

16	Describe a data distribution by its center, spread, and overall shape	1-6	391

2. READING Ms. Sanchez keeps track of the total number of books each student in the book club reads during the school year. Use the standard deviation formula to find and interpret the standard deviation of the data. Round your answers to the nearest tenth.

Books Read		
9	6	12
8	9	14
10	13	8

SCAN ME

16	Describe a data distribution by its center, spread, and overall shape	1-6	391

Use a graphing calculator to find the mean and standard deviation of each set of data. Round to the nearest tenth.

3. 20, 23, 24, 23, 22, 25, 21, 23, 24, 22, 21, 23, 22, 24

4. 150, 153, 125, 136, 143, 150, 166, 148, 150, 173, 150, 153, 143, 142, 153

16	Describe a data distribution by its center, spread, and overall shape	1-6	391

Use a graphing calculator to find the mean and standard deviation of each set of data. Round to the nearest tenth.

5. 9.0, 3.8, 6.2, 7.1, 5.3, 6.2, 7.1, 8.2, 7.1, 4.5, 9.9, 8.2

6. 3350, 2800, 4525, 2150, 2800, 2150, 3350, 1800, 5250, 3975, 580, 2800

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Question 17

Find the area under normal distribution curves

Page 401

Exercise 1 - 13

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Identify the random variable in each distribution, and classify it as *discrete* or *continuous*. Explain your reasoning.

1. the number of texts received per week

SCAN ME

Identify the random variable in each distribution, and classify it as *discrete* or *continuous*. Explain your reasoning.

2. the number of "likes" for a Web page

Identify the random variable in each distribution, and classify it as *discrete* or *continuous*. Explain your reasoning.

3. the height of a plant after a specific amount of time

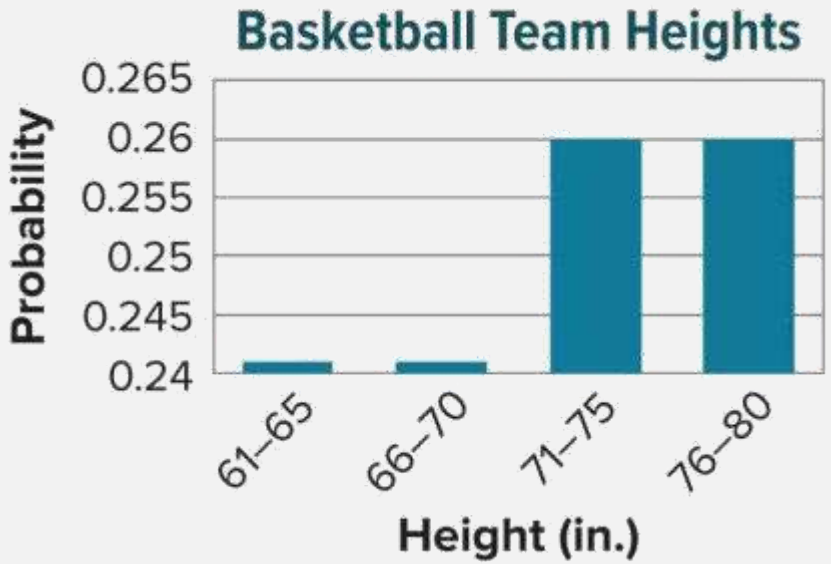
SCAN ME

4. **FUNDRAISING** At a fundraising dinner, the underside of 200 plates were randomly tagged with a sticker to indicate winning a cash prize. The frequency table shows the number of winning plates for each prize. Construct a relative frequency table, and graph the probability distribution.

Prize, (X)	Frequency
$5	150
$50	40
$100	9
$1000	1

SCAN ME

5. BASKETBALL An athletic director made a probability distribution of the heights of her team's basketball players, and distributed a flyer that claimed that the majority of the players on the basketball team are 71 inches or taller. Identify any flaws in the representation of the probability distribution.



SCAN ME

6. **TRACK** The preliminary times for a 110-meter hurdles race are shown. Create a histogram of the set of data. Determine whether the data can be approximated with a normal distribution.

Times (seconds)
14.75, 14.77, 14.31, 14.83, 14.84, 14.35, 14.69, 14.63, 14.74, 14.82, 14.25, 14.93

7. A normal distribution has a mean of 186.4 and a standard deviation of 48.9.

a. What range of values represents the middle 99.7% of the data?

SCAN ME

7. A normal distribution has a mean of 186.4 and a standard deviation of 48.9.

b. What percent of data will be greater than 235.3?

SCAN ME

7. A normal distribution has a mean of 186.4 and a standard deviation of 48.9.

c. What range of values represents the upper 2.5% of the data?

Find the *z*-value for each standard normal distribution.

8. $\sigma = 9.8$, $X = 55.4$, and $\mu = 68.34$

9. $\sigma = 11.6$, $X = 42.80$, and $\mu = 68.2$

Find the *z*-value for each standard normal distribution.

10. $\sigma = 11.9$, $X = 119.2$, and $\mu = 112.4$

17	Find the area under normal distribution curves	1-13	401

Use a table to find the area under the normal curve for each interval.

11. $z > 0.58$

12. $z < -1.56$

13. $-2.29 < z < 2.76$

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Question 18

Convert degree measures of angles to radian measures and vice versa and apply to finding arc length

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Exercise 52 - 69

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18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

52. TRANSPORTATION A traffic roundabout has a diameter of 200 meters. How far does an automobile travel in the roundabout if it goes one-fourth of the way around?

SCAN ME

18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

53. ANALOG CLOCKS The length of the minute hand of an analog clock is 5 inches. If the minute hand rotates from 12 noon to 12:40 P.M., then how far does its point move?

SCAN ME

18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

REGULARITY **Rewrite each degree measure in radians and each radian measure in degrees.**

54. 18°

55. 6°

56. −72°

SCAN ME

18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

REGULARITY **Rewrite each degree measure in radians and each radian measure in degrees.**

57. $-820°$

58. 4π

59. $\frac{5\pi}{2}$

SCAN ME

18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

REGULARITY **Rewrite each degree measure in radians and each radian measure in degrees.**

60. $-\frac{9\pi}{2}$

61. $-\frac{7\pi}{12}$

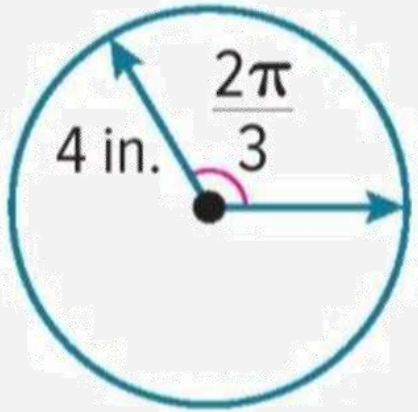
62. $-270°$

SCAN ME

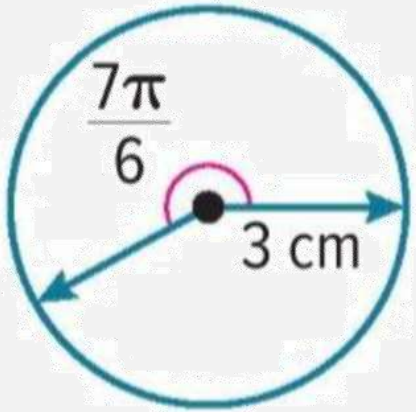
18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

Find the length of each arc. Round to the nearest tenth.

63.



64.



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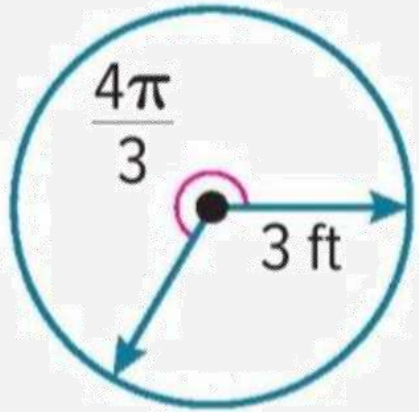

SCAN ME

18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

66. **TIME** Find both the degree and radian measures of the angle through which the hour hand on a clock rotates from 5 A.M. to 10 P.M.

SCAN ME

18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

67. ROTATION A truck with 16-inch radius wheels is driven at 77 feet per second (52.5 miles per hour). Find the measure of the angle through which a point on the outside of the wheel travels each second. Round to the nearest degree and nearest radian.

SCAN ME

18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

68. **PLANETS** Earth makes one full rotation on its axis every 24 hours. How long does it take Earth to rotate through 150°? Neptune makes one full rotation on its axis every 16 hours. How long does it take Neptune to rotate through 150°?

SCAN ME

18	Convert degree measures of angles to radian measures and vice versa and apply to finding arc length	52-69	422

69. SURVEYING If a surveyor's wheel with a diameter of 19 inches completes $\frac{5}{6}$ of a rotation, what is the total distance traveled in inches? Round to the nearest hundredth if necessary.

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Question 19

Find values of trigonometric ratios

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Exercise 1 - 12

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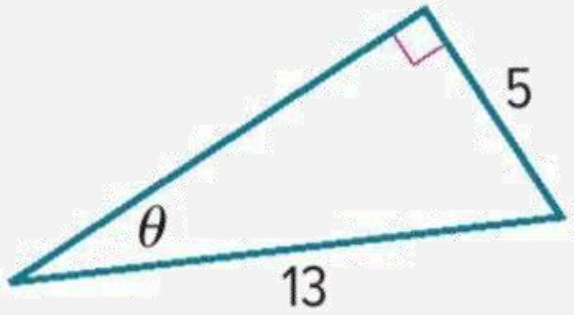
19	Find values of trigonometric ratios	1-12	431

Find the exact values of the six trigonometric functions for angle θ.

1.

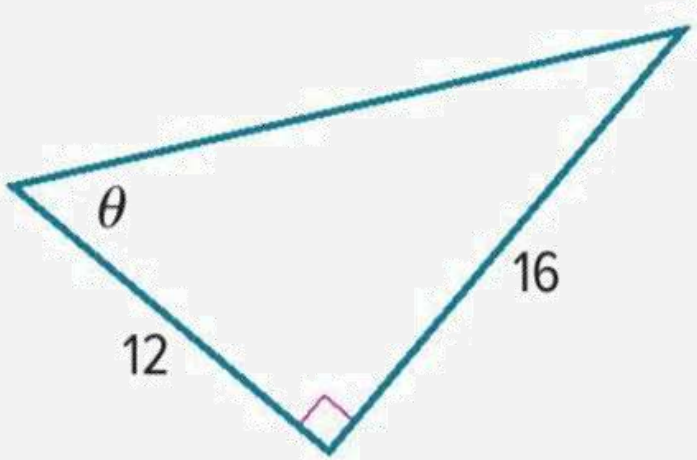


SCAN ME

19	Find values of trigonometric ratios	1-12	431

Find the exact values of the six trigonometric functions for angle θ.

2.

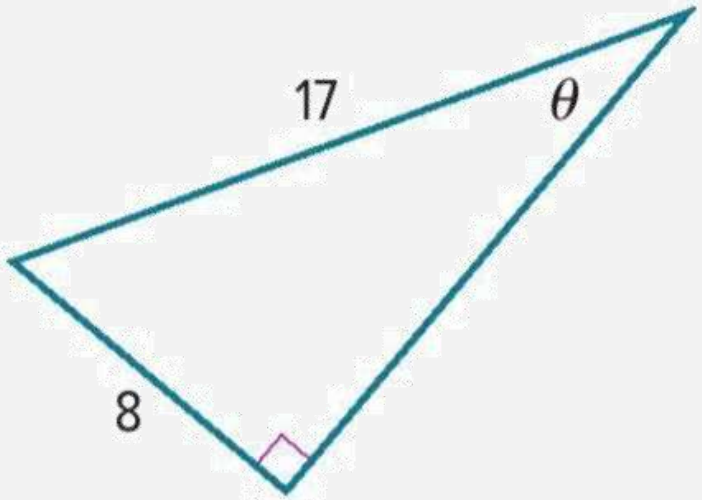


SCAN ME

19	Find values of trigonometric ratios	1-12	431

Find the exact values of the six trigonometric functions for angle θ.

3.

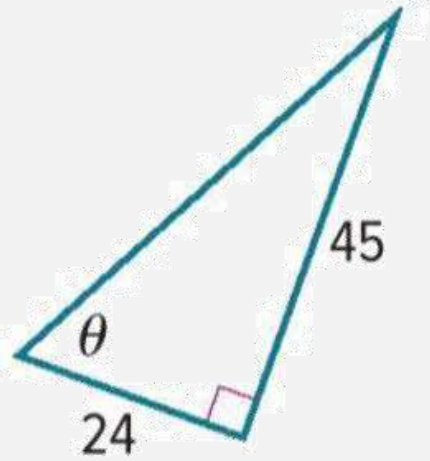


SCAN ME

19	Find values of trigonometric ratios	1-12	431

Find the exact values of the six trigonometric functions for angle θ.

4.

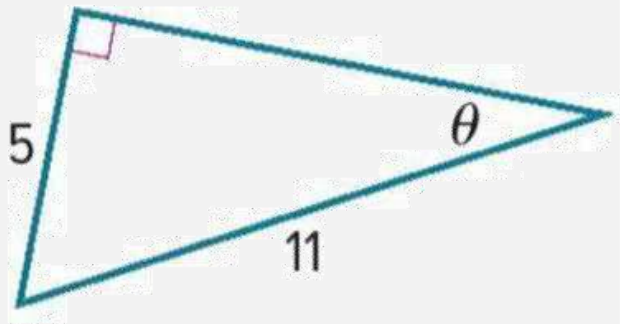


SCAN ME

19	Find values of trigonometric ratios	1-12	431

Find the exact values of the six trigonometric functions for angle θ.

5.

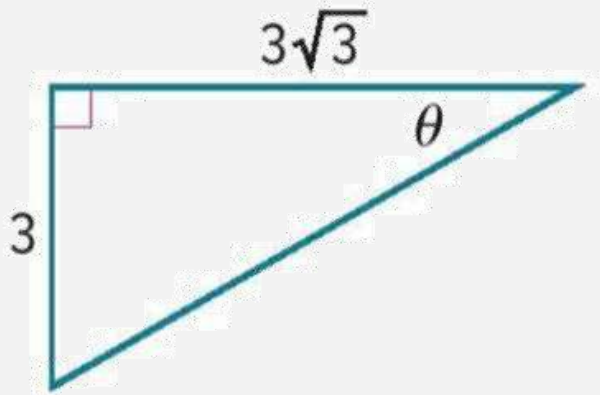


SCAN ME

19	Find values of trigonometric ratios	1-12	431

Find the exact values of the six trigonometric functions for angle θ.

6.



SCAN ME

19	Find values of trigonometric ratios	1-12	431

In a right triangle, $\angle A$ and $\angle B$ are acute. Find the values of the five remaining trigonometric functions.

7. $\tan A = \frac{8}{15}$

SCAN ME

19	Find values of trigonometric ratios	1-12	431

In a right triangle, $\angle A$ and $\angle B$ are acute. Find the values of the five remaining trigonometric functions.

8. $\cos A = \frac{3}{10}$

SCAN ME

19	Find values of trigonometric ratios	1-12	431

In a right triangle, $\angle A$ and $\angle B$ are acute. Find the values of the five remaining trigonometric functions.

9. $\tan B = 3$

SCAN ME

19	Find values of trigonometric ratios	1-12	431

In a right triangle, $\angle A$ and $\angle B$ are acute. Find the values of the five remaining trigonometric functions.

10. $\sin B = \frac{4}{9}$

SCAN ME

19	Find values of trigonometric ratios	1-12	431

In a right triangle, $\angle A$ and $\angle B$ are acute. Find the values of the five remaining trigonometric functions.

11. $\cos A = \frac{1}{2}$

SCAN ME

19	Find values of trigonometric ratios	1-12	431

In a right triangle, $\angle A$ and $\angle B$ are acute. Find the values of the five remaining trigonometric functions.

12. $\sin A = \frac{15}{17}$

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Question 20

Describe and graph the sine, cosine, and tangent functions

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Exercise 5 - 16

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20	Describe and graph the sine, cosine, and tangent functions	5-16	451

Find the amplitude and period of each function.

5. $y = 2\cos\theta$

6. $y = 2\sin\theta$

SCAN ME

20	Describe and graph the sine, cosine, and tangent functions	5-16	451

Find the amplitude and period of each function.

7. $y = \cos \frac{1}{2}\theta$

8. $y = \frac{3}{4}\cos\theta$

SCAN ME

20	Describe and graph the sine, cosine, and tangent functions	5-16	451

Find the amplitude and period of each function.

9. $y = \frac{1}{2}\sin 2\theta$

10. $y = 3\cos 2\theta$

SCAN ME

20	Describe and graph the sine, cosine, and tangent functions	5-16	451

Find the amplitude and period of each function. Then graph the function.

11. $y = 3\sin\theta$

12. $y = \cos 3\theta$

SCAN ME

20	Describe and graph the sine, cosine, and tangent functions	5-16	451

Find the amplitude and period of each function. Then graph the function.

13. $y = \sin 4\theta$

14. $y = \frac{3}{2}\sin\theta$

20	Describe and graph the sine, cosine, and tangent functions	5-16	451

Find the amplitude and period of each function. Then graph the function.

15. $y = 4\cos 2\theta$

16. $y = 5\sin\frac{2}{3}\theta$

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Thank you

Any Questions/Doubts?
Ask them in the Comments!

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