

Islamic University of Gaza

Faculty of Science

Calculus A

Department of Math

Date: 9-12-2007

Second midterm Exam

Time:-1 Hour

إسم الطالب/ة:	Q1	Q2	Q3	Q4	Total
الرقم الجامعي:	15	15	10	10	50
إسم المدرس: الرقم التسلسلي:					

[Q1] Find $\frac{dy}{dx}$

a) $y = e^{-\sqrt{3}x} + \ln(x^2 + 1)$

b) $x^2 y^3 = \sin\left(\frac{1}{y}\right)$

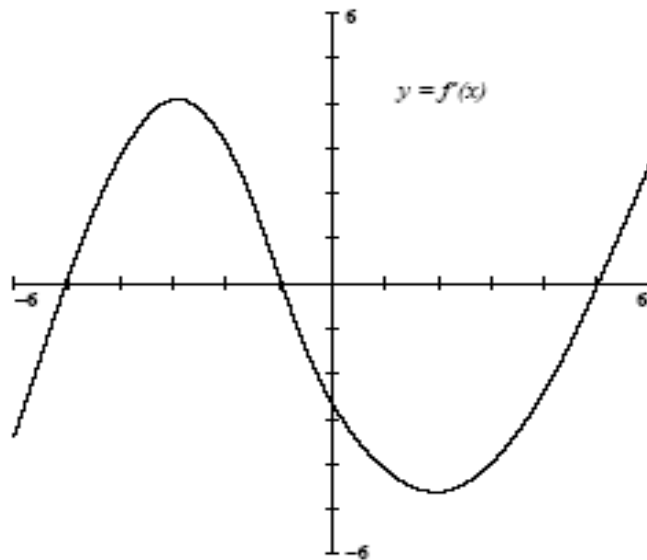
c) $y = \int_e^{\tan^2 x} \frac{dt}{\sqrt{t+1}}$

[Q2] (a) Use the definition of the derivative to determine whether the function $f(x) = |x + 3|$ has a derivative at $x = -3$.

(b) Find all the horizontal and vertical asymptotes for $f(x) = \frac{x^2 - 4}{(x-2)(2x-3)}$

[Q3] (a) Find the real numbers a and b such that $a < \int_0^{\frac{\pi}{3}} \sqrt{1 + \cos x} \, dx < b$

(b) Evaluate: $\int (\cos x - \sin x)^2 \, dx$



[Q4] The graph of $y = f'(x)$, the derivative of the function f is shown above.

(a) On which interval(s) is f increasing?

(b) On which interval(s) is the graph of f concave up?

(c) List the x coordinate(s) of the relative minima of f .

(d) List the x coordinate(s) of the relative maxima of f .

(e) List the x coordinate(s) of the inflection point(s) of the graph of f .