

**The Islamic University Of Gaza**  
**Department of Mathematics**  
**Calculus A (Math A1401)**

**Date: 4/11/2003**

**First Midterm Exam**

**Time: 60 Minutes**

	Q.1	Q.2	Q.3	Q.4	Total
	10	15	13	12	50

**Answer the following questions:**

**Q.1** Determine whether the following statements are true or false. If the statement is false, then correct it.

(a) The graph of an even function is symmetric about the x-axis.

(b) The slope of the line  $y - 4 = 0$  is equal to 4.

(c) The value of  $\lceil -5.7 \rceil$  is equal to  $-6$ .

(d) The function  $f(x) = \frac{\cos x}{x^2 + 1}$  is continuous for all real numbers  $x$ .

(e) The function  $f(x) = \tan x$  is an even function.

(f) If a function  $f(x)$  is not defined at  $x = c$ , then  $\lim_{x \rightarrow c} f(x)$  may or may not exist.

**Q.2** (a) Find  $\lim_{x \rightarrow 5} \frac{x|x-5|}{x-5}$

(b) Show that  $f(x) = \begin{cases} x^2 + 2, & x \leq 1 \\ x + 2, & x > 1. \end{cases}$  is continuous at  $x = 1$ .

**Q.3 (a)** If  $f(x) = \sec x + \tan x$ , then show that  $f'(x) = \frac{f(x)}{\cos x}$ .

**(b)** Find an equation for the normal line to the curve  $x^2 + xy + y^2 - 3y = 10$  at the point  $(2, 3)$ .

**Q.4** Let  $f(x) = \sqrt{x^2 - 3x + 2}$ .

(a) Find the domain of  $f(x)$ .

(b) If  $(gof)(x) = x^2 - 3x + 2$ , then find  $g(x)$ .

(c) Find the domain of  $(gof)(x)$ .