عمادة السنة التحضيرية
قسم مهارات الرياضيات

جامعة نجران
NAJRAN UNIVERSITY

الزمن : ساعة واحدة فقط
تاريخ الاختبار : 1438/01/25هـ
2016/10/26م
يوم الاختبار : الأربعاء

النموذج (A)

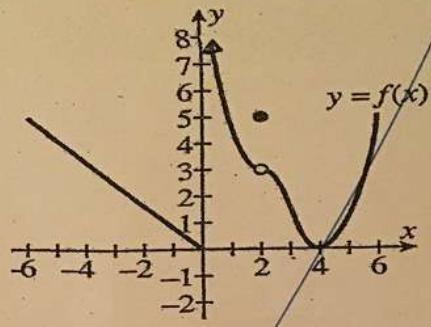
الاختبار الفصلي الأول – الفصل الدراسي الأول العام الجامعي 1437 - 1438 هـ

الاسم: ..... الرقم الجامعي: ..... الشعبة: ..... رقم الكشف: .....

Q1: Choose the correct answer (Five from Seven) of the following

كتابة : .....
التوقيع : .....

5 marks



1.	(from the above figure) $\lim_{x\to 0^+} f(x) =$			
	a) 0	b) $-\infty$	c) $+\infty$	d) d. n. e.
2.	(from the above figure) $\lim_{x\to 2} f(x) =$			
	a) 3	b) 5	c) 0	d) d. n. e.
3.	(from the above figure), the function f is discontinuous at the points on (-6.6).			
	a) $x = 0, x = 1$	b) $x = -1, x = 0$	c) $x = 1, x = 2$	d) $x = 0, x = 2$
4.	$\lim_{x\to 1+} \frac{\lvert x-3\rvert}{x-2} =$			
	a) $-\infty$	b) $+\infty$	c) -2	d) d. n. e.
5.	The function $f(x) = x^4 - x^2 - 6$, has at least one zero in the interval …			
	a) $[3,4]$	b) $[0,1]$	c) $[2,3]$	d) $[-\sqrt{3},\sqrt{3}]$
6.	$\lim_{x\to+\infty} \frac{x^6 - x + x^7}{4 - x^4} =$			
	a) -1	b) $+\infty$	c) $-\infty$	d) 0
7.	Let $\lim_{x\to 0} \frac{\tan(k\,x)}{\sin(3x)} = \frac{4}{3}$, then $k =$			
	a) $\frac{4}{3}$	b) 4	c) 3	d) $\frac{3}{4}$

Q4:

a) Find all values of c , such that (3 marks)

$$f(x) = \begin{cases} x^2 - 3 & x \neq c \\ 2x & x = c \end{cases}$$

is continuous at $x = c$?

b) Find all numbers at which $f(x) = \frac{x^2-x-6}{x^2-2x}$ is discontinuous. (2 marks)

Q5:

a) Find the following limit: (2 marks)

$$\lim_{x \to \infty} x \csc(4x) =$$

b) Discuss the differentiability for

$$f(x) = \begin{cases} x+1 & x \geq 1 \\ x^2 & x < 1 \end{cases}$$

at the following points

1) $x = 1$ (2 marks)

2) $x = 2$ (one mark)

Q2: Find the following limit, if it exists.

a) $\lim_{x\to 5} \frac{\sin(x-5)}{\sqrt{x+4}-1} =$ (one mark)

b) $\lim_{x\to 4} \frac{\sqrt{x}-2}{x-4} =$ (2 marks)

c) If $\lim_{x\to 2} \frac{f(x)-4}{x-1} = 5$, then find $\lim_{x\to 2} f(x) =$ (2 marks)

Q3:

a) Find the vertical asymptote and the horizontal asymptote of $f(x) = \frac{x+1}{x^2+1}$, if any. (3 marks)

b) By using Squeeze Theorem, Find $\lim_{x\to\infty} \frac{2-\sin x}{x+2}$ (2 marks)