King Abdulaziz University
Rabigh College of Science and Arts
Department of Mathematics

Second Exam – Math110
Date: 11/3/1440
Time: 90 minutes

Name……………………………………ID:……….....................

A

Choose the correct answer of the following questions:

(1)	The vertical asymptotes of the graph of the function $y=\frac{4x^2+1}{3x-x^2}$ are			
	(a) $x=0,\ x=3$	(b) $x=-4$	(c) $y=-4$	(d) $y=0,\ y=3$

(2)	The horizontal asymptote of the graph of the function $y=\frac{4x^2+1}{3x-x^2}$ is			
	(a) $x=0,\ x=3$	(b) $x=-4$	(c) $y=-4$	(d) $y=0,\ y=3$

(3)	$\lim_{x\to -1}\frac{x^2+1}{x^2+x-2}=$			
	(a) 1	(b) 2	(c) -2	(d) -1

(4)	$\lim_{x\to 2}\frac{x^2-4}{x-2}=$			
	(a) 8	(b) -2	(c) 4	(d) 1

(5)	$\lim_{x\to 0}\frac{\sqrt{x+1}-1}{x}=$			
	(a) 10	(b) 2	(c) $\frac{1}{2}$	(d) $\frac{1}{10}$

(6)	If $\lim_{x\to 3}f(x)=3$, $\lim_{x\to 3}g(x)=-1$, $\lim_{x\to 3}h(x)=10$, then $\lim_{x\to 3}[f(x)g(x)+h(x)]=$			
	(a) -30	(b) 7	(c) 12	(d) 1

(7)	If $f(x)=\begin{cases}2x+3 & ;\ x\neq 2\\ 5 & ;\ x=2\end{cases}$, then $\lim_{x\to 2}f(x)=$			
	(a) 3	(b) 5	(c) 7	(d) Does not exist

(8)	For what value of the constant c is the function f continuous on $(-\infty,+\infty)$ $f(x)=\begin{cases}\frac{x-1}{x^2-1} & \text{if } x\neq 1\\ cx^3 & \text{if } x=1\end{cases}$ at x=1			
	(a) 3	(b) 2	(c) $\frac{2}{3}$	(d) $\frac{1}{2}$

(9)	The function $f(x)=\begin{cases}x^2-1 & \text{if } x\neq 2\\ 5 & \text{if } x=2\end{cases}$ is continuous at $x=2$	
	(a) True	(b) False

(10)	$\lim_{x\to\infty}\frac{\sqrt{4x^2+2}}{2x-1}=$			
	(a) 2	(b) 4	(c) 3	(d) 1

(11)	$\lim_{x\to\infty}\frac{1-x-2x^2}{x^2-7}=$			
	(a) -4	(b) 4	(c) -2	(d) 2

(12)	Any Polynomial function is continuous on $\mathbb{R}=(-\infty,\infty)$.	
	(a) True	(b) False

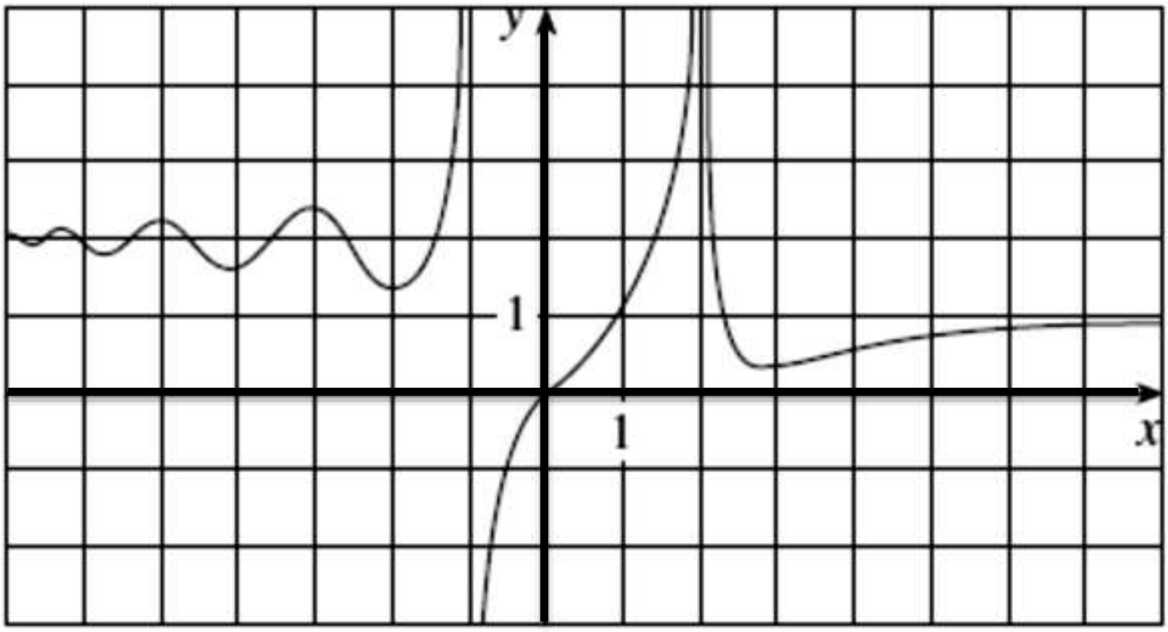
(13)	If f and g are continuous at a, then fg is also continuous at a.	
	(a) True	(b) False

(14)	$f(x)=\begin{cases}2x & \text{if } x\geq 1\\ 3 & \text{if } x<1\end{cases}$, then $\lim_{x\to 1^+}f(x)=$			
	(a) 0	(b) 2	(c) 3	(d) Does not exist

(15)	If $\lim_{x\to 2}\frac{g(x)+3}{x}=-3$, then $\lim_{x\to 2}g(x)=$			
	(a) 0	(b) 3	(c) -3	(d) -9

(16)	The function $f(x)=x^2+e^x$ is continuous on			
	(a) $(2,\infty)$	(b) $[0,\infty)$	(c) $(0,\infty)$	(d) $(-\infty,\infty)$

In [17-21] consider the following graph of the function $f(x)$ then



(17)	$\lim\limits_{x \to -1^+} f(x) =$
	(a) $-\infty$ (b) 0 (c) 4 (d) ∞

(18)	$\lim\limits_{x \to -1^-} f(x) =$
	(a) $-\infty$ (b) 0 (c) 4 (d) ∞

(19)	The function f is continuous at $x = 2$.
	(a) True (b) False

(20)	The vertical asymptotes of the function f are:
	(a) $y=-2,\ y=-1$ (b) $x=-1,\ x=2$ (c) $y=1,\ y=2$ (d) $x=1,\ x=-2$

(21)	The horizontal asymptotes of the function f are:
	(a) $y=-2,\ y=-1$ (b) $x=-1,\ x=2$ (c) $y=1,\ y=2$ (d) $x=1,\ x=-2$

(22)	$\lim\limits_{x \to \infty} \left(\sqrt{x^2+1} - x \right) =$
	(a) 4 (b) 0 (c) 2 (d) Does not exist

(23)	If $f(x) = x^2(x-1)$, then $f''(x) =$
	(a) $3x-1$ (b) $2(3x-1)$ (c) $2x$ (d) $2(3x+1)$

(24)	If $y=\pi^2$ the $y'=$			
	(a) π	(b) 2π	(c) 0	(d) π^2

(25)	An equation of the tangent line to the curve $y=\sqrt[4]{x}$ at the point (1,1) is			
	(a) $4y-x=3$	(b) $4y+x=3$	(c) $y-4x=5$	(d) $y+4x=5$

(26)	The nth derivative , $f^{(n)}(x)$ of the function $f(x)=xe^x$ is			
	(a) $e^x(x+1)$	(b) e^x	(c) xe^x	(d) $e^x(x+n)$

(27)	$\lim\limits_{x\to\infty} e^x =$			
	(a) 1	(b) 0	(c) $-\infty$	(d) ∞

(28)	If $y=\dfrac{x^3}{1-x^2}$, the $y'=$			
	(a) $\dfrac{3-x^2}{(1-x^2)^2}$	(b) $\dfrac{x^2(3-x^2)}{(1-x^2)^2}$	(c) $\dfrac{x^2(3+x^2)}{(1-x^2)^2}$	(d) $\dfrac{x^2}{(1-x^2)^2}$

(29)	If $y=2x^5-2x^9+e^x$, then $y'=$			
	(a) $10x^4-18x^8$	(b) $10x^4-18x^8+1$	(c) $x^4-x^8+e^x$	(d) $10x^4-18x^8+e^x$

(30)	$\dfrac{d}{dx}\left(e^x\sqrt{x}\right)=$			
	(a) $\dfrac{1}{2\sqrt{x}}+\sqrt{x}$	(b) $e^x\left(\dfrac{1}{2\sqrt{x}}+\sqrt{x}\right)$	(c) $e^x\left(1+\sqrt{x}\right)$	(d) $e^x\left(\dfrac{1}{2\sqrt{x}}-\sqrt{x}\right)$