

Solved

B

King Abdul Aziz University Faculty of Sciences		Mathematics Department	
Math 110		Second Test Fall 2012 (30 Marks)	
Student Name:		Student Number:	
1) $\csc\left(\frac{\pi}{3}\right) =$			
☐ A $\frac{1}{\sqrt{2}}$	☐ B $\frac{\sqrt{3}}{2}$	☐ C $\frac{1}{\sqrt{3}}$	☒ D $\frac{2}{\sqrt{3}}$
2) Find the domain of the function $f(x) = 3^x$.			
☒ A $\mathbb{R} = (-\infty, \infty)$	☐ B $(0, \infty)$	☐ C $(-\infty, 0)$	☐ D $[-1, 1]$
3) Find the range of the function $f(x) = 3^x$.			
☐ A $\mathbb{R} = (-\infty, \infty)$	☒ B $(0, \infty)$	☐ C $(-\infty, 0)$	☐ D $[-1, 1]$
4) If $f(x) = \sin x$, then $D_f =$			
☐ A $(-\infty, 1]$	☐ B $(-\infty, -1)$	☒ C $\mathbb{R} = (-\infty, \infty)$	☐ D $[-1, 1]$
5) Find the inverse of the function $f(x) = (2x - 7)^2, x \in [0, \infty)$.			
☐ A $(2x - 7)^{-2}$	☒ B $\frac{\sqrt{x} + 7}{2}$	☐ C $\frac{x - \sqrt{7}}{2}$	☐ D $\frac{\sqrt{x} - 7}{2}$
6) Find the inverse of the function $f(x) = \sqrt[3]{x^7}$.			
☒ A $\sqrt[3]{x^3}$	☐ B $\frac{1}{\sqrt[3]{x^7}}$	☐ C $-\sqrt[3]{x^7}$	☐ D $\sqrt[2]{x}$
7) If $4x - 3 \leq f(x) \leq x + 3$, then $\lim_{x \rightarrow 2} f(x) =$			
☐ A does not exist	☐ B 1	☐ C 0	☒ D 5
8) Find the domain of the function $f(x) = \cos^{-1}(3x + 5)$.			
☐ A $\left(-2, -\frac{4}{3}\right)$	☐ B $\left[-2, \frac{4}{3}\right]$	☐ C $[-2, 2]$	☒ D $\left[-2, -\frac{4}{3}\right]$
9) If $\lim_{x \rightarrow 2} \frac{f(x) + 4}{x + 1} = 2$, then $\lim_{x \rightarrow 2} f(x) =$			
☐ A 8	☐ B 12	☒ C 2	☐ D 11
10) $\log_2 64 + \log_2 32 + \log_2 2 =$			
☐ A -2	☒ B 12	☐ C -10	☐ D 0
11) If $9^{(x+1)} = 81$, then $x =$			
☐ A 3	☒ B 1	☐ C $\frac{1}{3}$	☐ D -1

12)	$\frac{\sin x}{\cos x} =$	☒ A $\tan x$	☐ B $\cot x$	☐ C $\sec x$	☐ D $\csc x$
13)	$\frac{8\pi}{5} \text{ rad} =$	☐ A 216°	☐ B 252°	☒ C 288°	☐ D 324°
14)	$300^\circ =$	☐ A $\frac{4\pi}{3} \text{ rad.}$	☒ B $\frac{5\pi}{3} \text{ rad.}$	☐ C $\frac{7\pi}{3} \text{ rad.}$	☐ D $3\pi \text{ rad.}$
15)	The inverse of $f = \{(-4, 3), (-2, 1), (5, 4), (0, -2), (9, 7)\}$ is	☐ A $f^{-1} = \{(-4, 3), (1, -2), (4, 5), (-2, 0), (7, 9)\}$ ☐ B $f^{-1} = \{(-4, 3), (-2, 1), (4, 5), (-2, 0), (7, 9)\}$ ☐ C $f^{-1} = \{(-2, 1), (5, 4), (0, -2), (9, 7), (-4, 3)\}$ ☒ D $f^{-1} = \{(3, -4), (1, -2), (4, 5), (-2, 0), (7, 9)\}$			
16)	If $\alpha = \tan^{-1}\left(\frac{1}{2}\right)$, then $\csc \alpha =$	☐ A $\frac{2}{\sqrt{5}}$	☒ B $\sqrt{5}$	☐ C $\frac{1}{\sqrt{5}}$	☐ D $\frac{\sqrt{5}}{2}$
17)	$e^{5 \ln 2} =$	☐ A 2	☒ B 32	☐ C 5	☐ D 10
18)	$\lim_{x \rightarrow 2} (2x^3 - 3x^2 - 1) =$	☒ A 3	☐ B 0	☐ C 5	☐ D -3
19)	$\lim_{x \rightarrow 0} \frac{x^2 + 3x - 3}{x^2 - 5} =$	☐ A does not exist	☐ B $-\frac{3}{5}$	☐ C 3	☒ D $\frac{3}{5}$
20)	$\lim_{x \rightarrow 1} \frac{x^2 + 6x - 7}{x^2 + 2x - 3} =$	☐ A does not exist	☐ B 0	☐ C $\frac{1}{2}$	☒ D 2
21)	If $\sin(x) = \frac{2}{3}$, and $0 < x < \frac{\pi}{2}$, then $\tan(x) =$	☐ A $\frac{\sqrt{5}}{2}$	☒ B $\frac{2}{\sqrt{5}}$	☐ C $\frac{\sqrt{5}}{3}$	☐ D $\frac{3}{\sqrt{5}}$

22) $\lim_{x \rightarrow 3^-} \frac{|x-3|}{x-3} =$

- ☒ A -1 ☐ B 1 ☐ C 0 ☐ D does not exist

23) If $f(x) = \cos x$, then $R_f =$

- ☒ A $[-1, 1]$ ☐ B $(0, 1)$ ☐ C $(-1, 0]$ ☐ D $\mathbb{R} = (-\infty, \infty)$

24) $\lim_{x \rightarrow 0} \frac{\sqrt{x+16} - 4}{x} =$

- ☒ A $\frac{1}{8}$ ☐ B 8 ☐ C $-\frac{1}{8}$ ☐ D -8

25) $\lim_{x \rightarrow \infty} \frac{2x^3 + 2x - 3}{5x^3 + 6x - 7} =$

- ☐ A does not exist ☐ B 0 ☐ C ∞ ☒ D $\frac{2}{5}$

26) $\lim_{x \rightarrow 0} \frac{x^3 + 7x^2}{x^2} =$

- ☐ A -7 ☒ B 7 ☐ C -14 ☐ D 0

27) If $f(x) = \begin{cases} 2x+3 & ; x \geq -2 \\ 2x+5 & ; x < -2 \end{cases}$, then $\lim_{x \rightarrow (-2)^-} f(x) =$

- ☐ A -1 ☒ B 1 ☐ C 3 ☐ D 5

28) $\lim_{x \rightarrow 0} \frac{\sin(5x)}{\sin(2x)} =$

- ☐ A $\frac{2}{5}$ ☐ B 0 ☐ C 5 ☒ D $\frac{5}{2}$

29) $\lim_{x \rightarrow 7} \frac{x^2 - 49}{x - 7} =$

- ☐ A 7 ☐ B $\frac{1}{14}$ ☒ C 14 ☐ D 0

30) If $\ln(x-5) = 7$, then $x =$

- ☐ A e^7 ☐ B 7 ☒ C $e^7 + 5$ ☐ D $e^7 - 5$