

Solved

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King Abdul Aziz University Faculty of Sciences Mathematics Department
 Math 110 Second Test Fall 2012 (30 Marks) Time 90 m
 Student Name: Student Number: D

1) $\log_2 2 - \log_2 64 - \log_2 32 =$

- ☐ A -2 ☐ B 12 ☒ C -10 ☐ D 0

2) $e^{7 \ln 2} =$

- ☐ A 2 ☐ B 7 ☐ C 14 ☒ D 128

3) If $\ln(x+5) = 3$, then $x =$

- ☐ A $e^3 + 5$ ☒ B $e^3 - 5$ ☐ C e^3 ☐ D 3

4) $\lim_{x \rightarrow 1} \frac{x^2 + 7x - 8}{x^2 + x - 2} =$

- ☒ A 3 ☐ B $\frac{1}{3}$ ☐ C 0 ☐ D does not exist

5) $\lim_{x \rightarrow 2} (2x^3 - 3x^2 + 2) =$

- ☐ A 1 ☒ B 6 ☐ C 0 ☐ D -6

6) If $\lim_{x \rightarrow 2} \frac{f(x) + 4}{x + 1} = 5$, then $\lim_{x \rightarrow 2} f(x) =$

- ☐ A 8 ☐ B 12 ☐ C 2 ☒ D 11

7) Find the domain of the function $f(x) = 5^x$.

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

8) Find the range of the function $f(x) = 5^x$.

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

9) $\frac{\cos x}{\sin x} =$

- ☐ A $\sec x$ ☐ B $\csc x$ ☒ C $\cot x$ ☐ D $\tan x$

10) If $9^{(x+2)} = 81$, then $x =$

- ☐ A -1 ☐ B $\frac{1}{2}$ ☐ C 2 ☒ D 0

11) Find the inverse of the function $f(x) = \sqrt[3]{x^4}$.

- ☐ A $\sqrt[4]{x}$ ☒ B $\sqrt[4]{x^3}$ ☐ C $\frac{1}{\sqrt[3]{x^4}}$ ☐ D $-\sqrt[3]{x^4}$

12) If $4x - 9 \leq f(x) \leq x + 3$, then $\lim_{x \rightarrow 4} f(x) =$

- ☐ A does not exist ☒ B 7 ☐ C 1 ☐ D 0

13)	$\cos\left(\frac{\pi}{6}\right) =$	☐ A $\frac{1}{\sqrt{2}}$	☒ B $\frac{\sqrt{3}}{2}$	☐ C $\frac{1}{\sqrt{3}}$	☐ D $\frac{2}{\sqrt{3}}$
14)	If $f(x) = \begin{cases} 2x+7 & ;x \geq -2 \\ 2x+2 & ;x < -2 \end{cases}$, then $\lim_{x \rightarrow (-2)^-} f(x) =$	☐ A 7	☐ B 2	☐ C 3	☒ D -2
15)	$\lim_{x \rightarrow 0} \frac{x^2+3x-5}{x^2-2} =$	☐ A $-\frac{5}{2}$	☒ B $\frac{5}{2}$	☐ C 5	☐ D does not exist
16)	If $f(x) = \cos x$, then $D_f =$	☐ A $(-\infty, -1)$	☒ B $\mathbb{R} = (-\infty, \infty)$	☐ C $[-1, 1]$	☐ D $(-\infty, 1]$
17)	$\lim_{x \rightarrow 2^-} \frac{ x-2 }{x-2} =$	☐ A does not exist	☐ B 0	☐ C 1	☒ D -1
18)	$\lim_{x \rightarrow \infty} \frac{5x^3+2x-3}{4x^3+6x-7} =$	☒ A $\frac{5}{4}$	☐ B does not exist	☐ C ∞	☐ D 0
19)	If $f(x) = \sin x$, then $R_f =$	☐ A $(-1, 0]$	☐ B $(0, 1)$	☐ C $\mathbb{R} = (-\infty, \infty)$	☒ D $[-1, 1]$
20)	$\frac{6\pi}{5}$ rad =	☒ A 216°	☐ B 252°	☐ C 288°	☐ D 324°
21)	$540^\circ =$	☐ A $\frac{4\pi}{3}$ rad.	☐ B $\frac{5\pi}{3}$ rad.	☐ C $\frac{7\pi}{3}$ rad.	☒ D 3π rad.
22)	The inverse of the function $f = \{(-4, 3), (-2, 1), (3, 4), (5, -2), (1, 7)\}$ is .	☒ A $f^{-1} = \{(3, -4), (1, -2), (4, 3), (-2, 5), (7, 1)\}$	☐ B $f^{-1} = \{(-4, 3), (1, -2), (4, 3), (-2, 5), (7, 1)\}$	☐ C $f^{-1} = \{(-4, 3), (-2, 1), (4, 3), (-2, 5), (7, 1)\}$	☐ D $f^{-1} = \{(-2, 1), (3, 4), (5, -2), (1, 7), (-4, 3)\}$

23)	$\lim_{x \rightarrow 0} \frac{\sin(2x)}{\sin(3x)} =$	☐ A 2	☐ B $\frac{3}{2}$	☒ C $\frac{2}{3}$	☐ D 0
24)	$\lim_{x \rightarrow 5} \frac{x-5}{x^2-25} =$	☐ A 10	☐ B 0	☐ C $\frac{1}{5}$	☒ D $\frac{1}{10}$
25)	$\lim_{x \rightarrow 0} \frac{x^3-4x^2}{x^2} =$	☐ A -8	☐ B 0	☒ C -4	☐ D 4
26)	Find the inverse of the function $f(x) = (2x+5)^2, x \in [0, \infty)$.	☐ A $\frac{\sqrt{x}+5}{2}$	☐ B $(2x+5)^{-2}$	☒ C $\frac{\sqrt{x}-5}{2}$	☐ D $\frac{x-\sqrt{5}}{2}$
27)	$\lim_{x \rightarrow 0} \frac{\sqrt{x+49}-7}{x} =$	☐ A $-\frac{1}{14}$	☐ B -14	☒ C $\frac{1}{14}$	☐ D 14
28)	If $\alpha = \tan^{-1}\left(\frac{1}{2}\right)$, then $\cos \alpha =$	☒ A $\frac{2}{\sqrt{5}}$	☐ B $\sqrt{5}$	☐ C $\frac{1}{\sqrt{5}}$	☐ D $\frac{\sqrt{5}}{2}$
29)	Find the domain of the function $f(x) = \sin^{-1}(3x-5)$.	☒ A $\left[\frac{4}{3}, 2\right]$	☐ B $\left[-\frac{4}{3}, 2\right]$	☐ C $[-2, 2]$	☐ D $\left(\frac{4}{3}, 2\right)$
30)	If $\sin(x) = \frac{2}{3}$, and $0 < x < \frac{\pi}{2}$, then $\cos(x) =$	☐ A $\frac{\sqrt{5}}{2}$	☐ B $\frac{2}{\sqrt{5}}$	☒ C $\frac{\sqrt{5}}{3}$	☐ D $\frac{3}{\sqrt{5}}$