

Solved

C

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

1) If $f(x) = \cos x$, then $D_f =$ ☐ A $(-\infty, -1)$ ☐ B $[-1, 1]$ ☒ C $\mathbb{R} = (-\infty, \infty)$ ☐ D $(-\infty, 1]$
2) Find the inverse of the function $f(x) = \sqrt[4]{x^3}$. ☐ A $\sqrt[12]{x}$ ☐ B $\frac{1}{\sqrt[4]{x^3}}$ ☒ C $\sqrt[3]{x^4}$ ☐ D $-\sqrt[4]{x^3}$
3) Find the domain of the function $f(x) = \cos^{-1}(3x - 5)$. ☐ A $(\frac{4}{3}, 2)$ ☐ B $[-\frac{4}{3}, 2]$ ☐ C $[-2, 2]$ ☒ D $[\frac{4}{3}, 2]$
4) If $\alpha = \tan^{-1}(\frac{1}{2})$, then $\sin \alpha =$ ☐ A $\frac{2}{\sqrt{5}}$ ☐ B $\sqrt{5}$ ☒ C $\frac{1}{\sqrt{5}}$ ☐ D $\frac{\sqrt{5}}{2}$
5) $\lim_{x \rightarrow 1} \frac{x^2 + x - 2}{x^2 + 7x - 8} =$ ☐ A 3 ☒ B $\frac{1}{3}$ ☐ C 0 ☐ D does not exist
6) If $\lim_{x \rightarrow 3} \frac{f(x) + 4}{x + 1} = 3$, then $\lim_{x \rightarrow 3} f(x) =$ ☒ A 8 ☐ B 12 ☐ C 2 ☐ D 11
7) $\lim_{x \rightarrow 2} (2x^3 - 3x^2 - 2) =$ ☐ A -2 ☐ B 0 ☐ C 1 ☒ D 2
8) Find the domain of the function $f(x) = 5^x$. ☐ A $(-\infty, 0)$ ☐ B $[-1, 1]$ ☒ C $\mathbb{R} = (-\infty, \infty)$ ☐ D $(0, \infty)$
9) Find the range of the function $f(x) = 5^x$. ☐ A $(-\infty, 0)$ ☐ B $[-1, 1]$ ☐ C $\mathbb{R} = (-\infty, \infty)$ ☒ D $(0, \infty)$
10) $e^{6 \ln 2} =$ ☐ A 2 ☐ B 6 ☒ C 64 ☐ D 12
11) $\lim_{x \rightarrow 0} \frac{x^2 + 3x - 2}{x^2 - 5} =$ ☒ A $\frac{2}{5}$ ☐ B $-\frac{2}{5}$ ☐ C 2 ☐ D does not exist

12) $\lim_{x \rightarrow 0} \frac{x}{\sqrt{x+49}-7} =$

☐ A $-\frac{1}{14}$

☐ B -14

☐ C $\frac{1}{14}$

☒ D 14

13) If $9^{(x-2)} = 81$, then $x =$

☐ A -4

☐ B $\frac{1}{4}$

☒ C 4

☐ D -1

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) $\lim_{x \rightarrow 0} \frac{x^3 + 4x^2}{x^2} =$

☐ A -8

☐ B 0

☐ C -4

☒ D 4

16) $\frac{7\pi}{5}$ rad =

☐ A 216°

☒ B 252°

☐ C 288°

☐ D 324°

17) $420^\circ =$

☐ A $\frac{4\pi}{3}$ rad.

☐ B $\frac{5\pi}{3}$ rad.

☒ C $\frac{7\pi}{3}$ rad.

☐ D 3π rad.

18) 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 $\frac{x-\sqrt{5}}{2}$

19) $\lim_{x \rightarrow \infty} \frac{4x^3 + 2x - 3}{5x^3 + 6x - 7} =$

☐ A does not exist

☒ B $\frac{4}{5}$

☐ C ∞

☐ D 0

20) $\lim_{x \rightarrow 2^+} \frac{|x-2|}{x-2} =$

☐ A does not exist

☐ B 0

☒ C 1

☐ D -1

21) If $\sin(x) = \frac{2}{3}$, and $0 < x < \frac{\pi}{2}$, then $\sec(x) =$

☐ A $\frac{\sqrt{5}}{2}$

☐ B $\frac{2}{\sqrt{5}}$

☐ C $\frac{\sqrt{5}}{3}$

☒ D $\frac{3}{\sqrt{5}}$

22) If $4x - 12 \leq f(x) \leq x + 3$, then $\lim_{x \rightarrow 5} f(x) =$	☒ A 8	☐ B does not exist	☐ C 1	☐ D 0
23) $\lim_{x \rightarrow 5} \frac{x^2 - 25}{x - 5} =$	☒ A 10	☐ B 0	☐ C 5	☐ D $\frac{1}{10}$
24) $\lim_{x \rightarrow 0} \frac{\sin(3x)}{\sin(2x)} =$	☐ A 3	☒ B $\frac{3}{2}$	☐ C $\frac{2}{3}$	☐ D 0
25) $\sin\left(\frac{\pi}{4}\right) =$	☒ A $\frac{1}{\sqrt{2}}$	☐ B $\frac{\sqrt{3}}{2}$	☐ C $\frac{1}{\sqrt{3}}$	☐ D $\frac{2}{\sqrt{3}}$
26) $\frac{\cos x}{\sin x} =$	☐ A $\sec x$	☐ B $\csc x$	☐ C $\tan x$	☒ D $\cot x$
27) If $\ln(x - 5) = 3$, then $x =$	☒ A $e^3 + 5$	☐ B $e^3 - 5$	☐ C e^3	☐ D 3
28) $\log_2 32 - \log_2 64 - \log_2 2 =$	☒ A -2	☐ B 12	☐ C -10	☐ D 0
29) The inverse of $f = \{(-4, 3), (-2, 1), (3, 4), (5, -2), (9, 7)\}$ is	☐ A $f^{-1} = \{(-4, 3), (1, -2), (4, 3), (-2, 5), (7, 9)\}$ ☒ B $f^{-1} = \{(3, -4), (1, -2), (4, 3), (-2, 5), (7, 9)\}$ ☐ C $f^{-1} = \{(-4, 3), (-2, 1), (4, 3), (-2, 5), (7, 9)\}$ ☐ D $f^{-1} = \{(-2, 1), (3, 4), (5, -2), (9, 7), (-4, 3)\}$			
30) If $f(x) = \sin x$, then $R_f =$	☐ A $\mathbb{R} = (-\infty, \infty)$	☐ B $(0, 1)$	☐ C $(-1, 0]$	☒ D $[-1, 1]$