

1) If $f(x) = 1 - \sqrt{x+2}$ and $f^{-1}(x) = x^2 + ax + b$, $x \leq 1$, then $a + b =$

A) - 3

B) 2

C) 4

D) - 4

E) 0

2) Which one of the following statements is FALSE ?

A) The function $f(x) = x^2 + 1$, $x < 1$, is a one to one function.

B) If $f(x) = 2^x$ then $f^{-1}(x) = \log_2 x$.

C) If $f(x) = x$ then $f^{-1}(x) = x$.

D) $f(x) = 5$ is NOT a one to one function.

E) If f is a one to one function, then f^{-1} exists.

3) The graph of the function $y = 1 - \left(\frac{1}{2}\right)^{2-x}$ lies **below** the x -axis on the interval

A) $(2, \infty)$

B) $(-\infty, 2)$

C) $(-\infty, 1)$

D) $(1, \infty)$

E) $(1, 2)$

4) The domain of the function $f(x) = \ln\left(\frac{(1-x)^2}{4x-x^2}\right)$

A) $(0, 1) \cup (1, 4)$

B) $(0, 4)$

C) $(1, 4)$

D) $(0, 1)$

E) $(-\infty, 0) \cup (1, 4) \cup (4, \infty)$

5) The sum of all the solution(s) of the equation

$$\log_{\sqrt{5}}(x) + \log_5(x^2 - 3) + \log_{1/5} 4 = 0 \quad \text{is}$$

- A) 2
- B) 4
- C) 0
- D) 3
- E) 6

6) The graph of the function $y = -\log|2 - x|$ is decreasing on the interval

- A) $(2, \infty)$
- B) $(-\infty, 2)$
- C) $(-\infty, \infty)$
- D) $(0, \infty)$
- E) $(-\infty, 0)$

7) The sum of all the solution(s) of the equation

$$4^x - 2^{x+3} + 12 = 0 \quad \text{is}$$

A) $\log_2 12$

B) $\log_2 6$

C) 7

D) $\log_2 8$

E) 1

8) The length of the arc intercepted by a central angle of 210° in a circle of radius 6 cm is given

A) 7π cm

B) $\frac{7\pi}{2}$ cm

C) 630 cm

D) $\frac{\pi}{2}$ cm

E) $\frac{7}{2}$ cm

- 9) If a student stands at the top of a cliff and looks down at a 60° angle of depression at the base of a tree that is 123 m away from the bottom of the cliff, then the height of the cliff is
- A) $123\sqrt{3}$
 - B) $41\sqrt{3}$
 - C) 123
 - D) 41
 - E) $123 + 41\sqrt{3}$
- 10) If $f(x) = -|x - 3| + 2$, $x \leq 3$, then the domain of the inverse function f^{-1} is
- A) $(-\infty, 2]$
 - B) $[2, \infty)$
 - C) $[3, \infty)$
 - D) $(-\infty, \infty)$
 - E) $(-\infty, 3]$

11) If $\tan 324^\circ = x$, then $\csc 36^\circ =$

A) $-\frac{\sqrt{x^2 + 1}}{x}$

B) $\frac{\sqrt{x^2 + 1}}{x}$

C) $\sqrt{x^2 + 1}$

D) $-\sqrt{x^2 + 1}$

E) $\frac{1}{x}$

12) If the reference angle of 10 radians is $10 - n\pi$, then $n =$

A) 3

B) 6

C) 4

D) 7

E) 5

13) If the terminal side of an angle θ in standard position is given by $Ax + y = 0$, $x < 0$ and $\sin \theta = \frac{1}{3}$, then $A =$

A) $\frac{\sqrt{2}}{4}$

B) $-\frac{\sqrt{2}}{4}$

C) $\frac{3\sqrt{2}}{2}$

D) 1

E) $\frac{3\sqrt{2}}{8}$

14) The graph of the function $f(x) = -2 \cos\left(\frac{\pi}{4}x - \frac{\pi}{2}\right)$, $0 \leq x \leq 10$ is increasing on the interval

A) $[2, 6]$

B) $[0, 4]$

C) $[0, 4] \cup [8, 10]$

D) $[8, 10]$

E) $[3, 4] \cup [9, 10]$

15) If the range of the function $y = K - 5 \sin\left(\frac{\pi}{2}x - \frac{\pi}{2}\right)$ is $[-7, 3]$, then $K =$

A) -2

B) $\pi + 2$

C) 0

D) 4

E) $2 - \pi$

16) $f(x) = 3 + \cos x$ and $g(x) = x \sin^2 x$, then

A) f is an even function and g is an odd function.

B) f is an even function and g is an even function.

C) f is an odd function and g is an odd function.

D) f is an odd function and g is an even function.

E) both functions f and g are neither odd nor even functions.

17) $\sin\left(-\frac{7\pi}{4}\right) + \tan(870^\circ)$

A) $\frac{3\sqrt{2} - 2\sqrt{3}}{6}$

B) $\frac{3}{2}$

C) $\frac{3\sqrt{2} + 2\sqrt{3}}{6}$

D) $\frac{2\sqrt{2} - 3\sqrt{3}}{6}$

E) $\frac{-3\sqrt{2} - 2\sqrt{3}}{6}$

18) If $A = \ln(\sec^2 x) - \ln(\tan^2 x)$, then $e^A - 1 =$

A) $\cot^2 x$

B) $\sec^2 x$

C) $\cos^2 x$

D) 0

E) 1

19) If $\log_2 y = x$, then $\left(\frac{1}{8}\right)^{1-x} =$

A) $\frac{y^3}{8}$

B) $\frac{y^3}{2}$

C) $\frac{y}{8}$

D) $8y$

E) $8y^3$

20) $\left(\log_{\sqrt{2}} 8\right)\left(\log_{32} \sqrt[3]{25}\right)\left(\log_{5^{-2}} 4\right) =$

A) $-\frac{4}{5}$

B) $\frac{4}{5}$

C) $-\frac{1}{3}$

D) $\frac{1}{3}$

E) -3

Answer Key

Testname: MATH 002 TERM 221 CODE 000

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A
- 7) A
- 8) A
- 9) A
- 10) A
- 11) A
- 12) A
- 13) A
- 14) A
- 15) A
- 16) A
- 17) A
- 18) A
- 19) A
- 20) A