Practice Test
Math 002- Term 052

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1) The domain of the function $f(x) = \ln(\frac{x-3}{x})$, in interval notation, is equal to

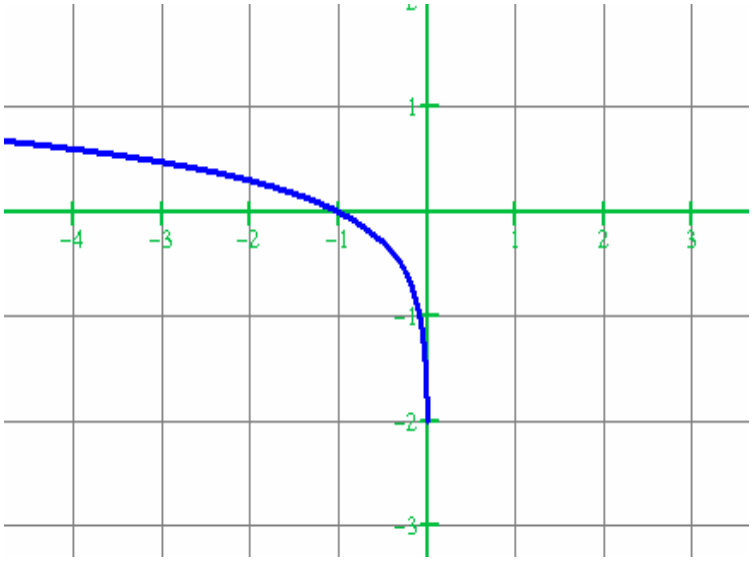
a) $(-\infty,0) \cup (3,\infty)$
b) $(3,\infty)$
c) $(-\infty,0)$
d) $(0,3)$
e) non of the above

2) The range of the function $f(x) = e^{-|x|} - 1$, in interval notation, is equal to

a) $(-1,0]$
b) $(-1,\infty]$
c) $[0,\infty)$
d) $(-\infty,0]$
e) $[1,2]$

3) Which one of the following functions corresponds to the adjacent figure?

a) $f(x) = \log(-x)$
b) $f(x) = -\log|x|$
c) $f(x) = -\log(-x)$
d) $f(x) = \log(x-1)$
e) $f(x) = \log(1-x)$



4) If $\log_x(\log_2 8) = 2$, the x is equal to

a) $\sqrt{3}$
b) 3
c) $-\sqrt{3}$
d) $\frac{3}{2}$
e) -3

5) The expression $\log_{x^2} b \times \log_{b^3} x$ is equal to

a) $\frac{1}{6}$
b) $\frac{1}{6}\log_x b$
c) $6\log_x b$
d) 6
e) $\frac{1}{6}\log_b x$

6) If $f(x) = 2^{-x+1} - 1$, then $f^{-1}(x)$ is equal to

a) $1 - \log_2(x+1)$

b) $1 + \log_2(x+1)$

c) $2 - \log_2(2x+1)$

d) $2 + \log_2(2x+1)$

e) $\log_2 x + 2$

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7) If $\log 2 = x$, then $\log_5 800$ is equal to

a) $\frac{3x+2}{1-x}$

b) $\frac{3x+2}{2}$

c) $3x$

d) $\frac{3x+2}{x+1}$

e) $\frac{3x}{5}$

8) The length of an arc that subtends a central angle of $120°$ in a circle of diameter 12 cm is equal to

a) $4\pi\ cm$

b) $\frac{3\pi}{2} cm$

c) $720\ cm$

d) $40\ cm$

e) $\frac{2\pi}{3}$

9) If a wheel with radius 10 centimeters is rotating at 100 revolutions per minute, then the linear speed of the wheel in centimeters per second is equal to

a) $\frac{100\pi}{3}$

b) 1000

c) $\frac{50\pi}{3}$

d) $\frac{20\pi}{3}$

e) $\frac{1000\pi}{3}$

10) Given the angles $\alpha = 51°49'$ and $\beta = 38°11'$. Which one of the following is true?

a) α and β are complementary angles.
b) $\alpha + \beta$ is an obtuse angle.
c) $\alpha + \beta$ is an acute angle.
d) α and β are supplementary angles.
e) Non of the above.

11) The graph of $y = 2\sec\frac{1}{2}x$ and $y = 2\sin\frac{1}{2}x$, where $0 \le x \le 6\pi$, intersect at :

a) no point
b) two points
c) one point
d) four points
e) three points

12) The $x-$intercept of the graph of the function $f(x) = 3 + 2\log_2(2x-1)$ is:

a) $(\frac{9}{16},0)$
b) $(\frac{17}{14},0)$
c) $(-\frac{21}{16},0)$
d) $(\frac{11}{4},0)$
e) $(\frac{23}{16},0)$

13) The sum of all solutions of $(\log x)^2 = \log x_{\frac{1}{10}}$ is equal to :

$a)\frac{11}{10}$

$b)\frac{101}{100}$

$c)11$

$d)21$

$e)1$

14) If W is the wrapping function with $W(t) = (\frac{3}{5},-\frac{4}{5})$, then the $x-$coordinate of $W(t-\frac{\pi}{2})$ is equal to :

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

$b)\frac{3}{5}$

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

$d)-\frac{3}{5}$

$e)-\frac{3}{4}$

15) The range of the function $y = -\frac{5}{2}+\frac{3}{2}\sec(x+\pi)$ is equal to:

$a)(-\infty,-4]\cup[-1,\infty)$

$b)\left(-\infty,-\frac{3}{2}\right]\cup\left[\frac{3}{2},\infty\right)$

$c)\left[-\frac{3}{2},\frac{3}{2}\right]$

$d)[-4,-1]$

$e)(-\infty,-1]\cup[1,\infty)$

16) The graph in the figure below is part of the graph if the equation:

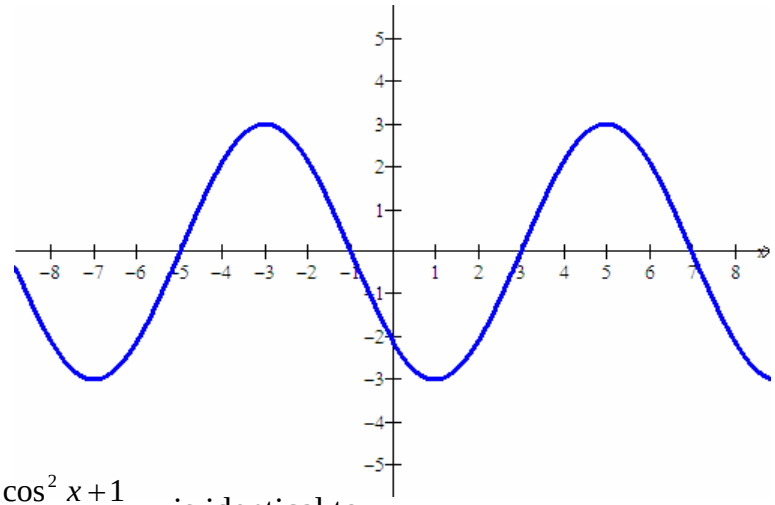
$a) y = -3\sin(\frac{\pi}{4}x + \frac{\pi}{4})$

$b) y = -3\cos(\frac{\pi}{4}x + \frac{\pi}{4})$

$c) y = 3\sin(\pi x + \pi)$

$d) y = 3\sin(\frac{\pi}{2}x + \frac{\pi}{2})$

$e) y = -3\cos(\pi x + \pi)$



17) The expression $\frac{\sin x + \csc x \cos^2 x + 1}{\sec x \csc x - \tan x} =$ is identical to

$a) \sec x + \tan x$

$b) \tan x - \csc x$

$c) \cos x + 1$

$d)\ 0$

$e) \sec x + \cot x$

18) $\frac{1 - \tan 21° \cot 51°}{\tan 21° + \tan 39°} =$

$a) \frac{\sqrt{3}}{3}$

$b) -\sqrt{3}$

$c) -\frac{\sqrt{5}}{2}$

$d) 2\sqrt{2}$

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

19) If $f(x) = a\cos bx$ with period = 8 and $f(4) = 3$, then ab =

$a) -\frac{3\pi}{4}$

$b) \frac{3\pi}{4}$

$c) -\frac{\pi}{4}$

$d) \frac{\pi}{4}$

$e) -\frac{\pi}{2}$

20) If $f(x) = -2\tan\frac{2x}{3}$, then the number of vertical asymptotes in the interval $[-3\pi, 3\pi]$ is equal to

$a) 4$

$b) 3$

$c) 2$

$d) 1$

$e) 5$

21. If $f(x) = -2\cos(\frac{\pi}{2}x + \pi) + 1$, then the **period + phase shift + amplitude** is equal to

$a) 4$

$b) -4$

$c) 6$

$d) -6$

$e) 8$

22) The expression $\sqrt{\frac{1-\cos x}{1+\cos x}}$, $0 < x < \frac{\pi}{2}$ is equal to

$a)\ \csc x - \cot x$

$b)\ \csc x + \cot x$

$c) \sec x + \tan x$

$d) \sec x - \tan x$

$e) \tan x + \cot x$

23) Given $\sin\alpha = \frac{4}{5}, \alpha$ in quadrant II, and $\sin(\frac{\pi}{2} - \beta) = -\frac{12}{13}, \beta$ in quadrant IV, then $\sec(\alpha + \beta)$ is equal to

a) $\frac{65}{63}$

b) $\frac{65}{33}$

c) $-\frac{65}{63}$

d) $-\frac{33}{63}$

e) *non of the above*

24) $\frac{\sin 15^\circ}{\sin 75^\circ} =$

a) $2 - \sqrt{3}$

b) $2 + \sqrt{3}$

c) $\frac{\sqrt{3}}{4}$

d) $\frac{\sqrt{3} + \sqrt{2}}{2}$

e) $\frac{\sqrt{3} - \sqrt{2}}{2}$

25) If $\frac{10^x - 10^{-x}}{10^x + 10^{-x}} = \frac{1}{2}$, then $x =$

a) $\frac{\log 3}{2}$

b) $\frac{\log 2}{3}$

c) $\log_2 3$

d) $\log_3 2$

d) $\log 6$