King Fahd University Of Petroleum & Minerals
Mathematical Sciences Department-Prep. Year
Math 004 - Term 041
Practice Test

Choose the correct choice of the following (20) MCQ

1) The expression $5\log_3 x - 8\log_9 y + \log_{\sqrt{3}} z + 1$ in single logarithmic form is:

a) $\log_3\left(\frac{3x^5\sqrt{z}}{y^4}\right)$

b) $\log_3\left(\frac{x^{5/2}\sqrt{3z}}{y^2}\right)$

c) $\log_3\left(\frac{3x^5 z^2}{y^4}\right)$

d) $\log_3\left(\frac{x^5\sqrt{z}}{y^4}\right)^3$

e) $\log_3\left(\frac{x^5 z^2}{y^4}\right)^3$

2) Let $\ln 2 = x$, $\ln 3 = y$, if $2^{t+1} = 3^{2t-1}$, then t in terms of x *and* y is equal to:

a) $\frac{y-x}{2x-y}$

b) $\frac{y+x}{2x-y}$

c) $-\frac{1}{2}$

d) $\frac{y+x}{2x-y}$

e) $\frac{y+x}{2y-x}$

3) If $\alpha = 20^\circ\, 40^\backslash\, 25^{\backslash\backslash}$, and $\beta = 15.05^\circ$ then find $\alpha + \beta$

a) $35^\circ\, 43^\backslash\, 25^{\backslash\backslash}$

b) $35^\circ\, 45^\backslash$

c) $35^\circ\, 34^\backslash\, 20^{\backslash\backslash}$

d) $35^\circ\, 45^\backslash\, 25^{\backslash\backslash}$

e) None

4) The arc length subtends a central angle of 100° in a unit circle of radius $3cm$.

a) $300cm$

b) $\frac{5\pi}{9}cm$

c) $\frac{15\pi}{3}cm$

d) $\frac{5\pi}{3}cm$

e) $\frac{5\pi}{27}cm$

5) A wheel is rotating at 90 revolutions per minute; then the angular speed in radians per second is equal to:

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

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

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

d) 3π

e) 180π

6) Given that $\sec\theta = 3$, *and* $\sin\theta < 0$, then $\csc\theta$

a) $-2\sqrt{2}$

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

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

d) $\frac{3\sqrt{2}}{4}$

e) $-\frac{3\sqrt{2}}{4}$

7) The adjacent figure represents a part of the graph of the function:

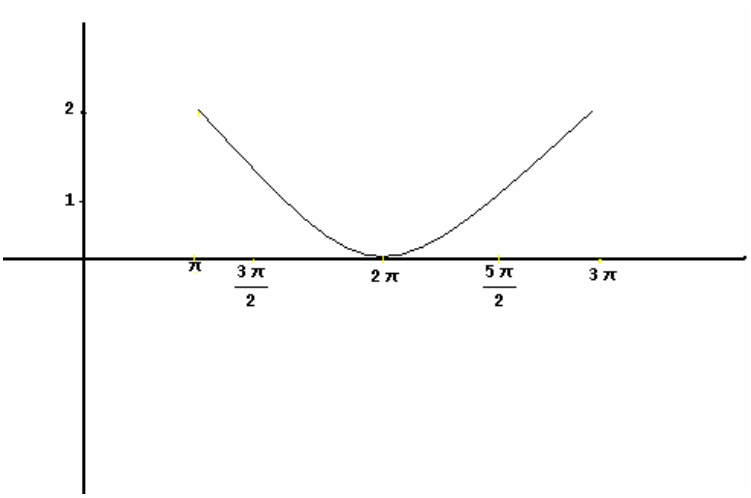
a) $y=\sin\left(x-\pi\right)+1$

b) $y=\cos\left(x+\pi\right)+1$

c) $y=\cos\left(x-\pi\right)+1$

d) $y=\cos\left(x-\pi\right)-1$

e) $y=\sin\left(x-\pi\right)+1$



8) The exact value of $\cot 225^\circ + \sec 150^\circ - \tan\frac{25\pi}{4}$

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

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

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

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

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

9) If $\left(-1,-\frac{4}{3}\right)$ is in the terminal side of an angle θ in standard position, then $\sec\theta-\csc\theta$ =

a) $-\frac{1}{4}$

b) $\frac{1}{5}$

c) 0

d) $-\frac{5}{12}$

e) $\frac{1}{7}$

10) The following figure represents the graph of

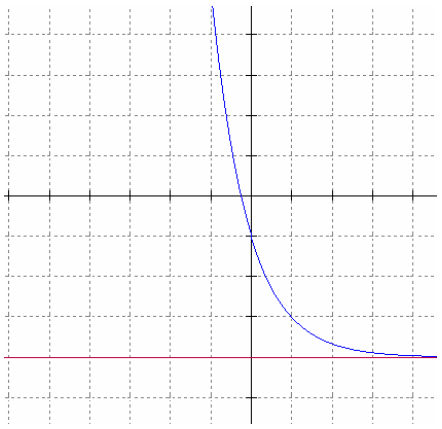
a) $y=\log_{1/4}(x-1)$

b) $y=\log_{1/4}(x+1)$

c) $y=2^{-x+1}-6$

d) $y=3^{-x+1}-4$

e) $y=-3^{-x+1}+2$



11) The expression $\dfrac{\csc x+\sec x}{\tan x+\cot x}$ is identical to

a) $\dfrac{1}{\sin x+\cos x}$

b) $\cos x+\sin x$

c) $\sin x-\cos x$

d) $\cos x-\sin x$

e) $\dfrac{1}{\sin x-\cos x}$

12) If $f(x)=a\cos bx$ where $b>0,$ and $f(3)=4$, then $f\left(\dfrac{21}{4}\right)$ equals to:

a) $2\sqrt{2}$

b) 1

c) -4

d) $-2\sqrt{2}$

e) 0

13) The solution set of the $Log_2\sqrt{y-2} + L\log_4(y-4) = \frac{1}{2}(3+Log_2 3)$ consists of

a) Two distinct real numbers
b) Only one negative integer number
c) Two positive real numbers
d) Only one positive integer number
e) One positive and one negative real numbers

14) Let W be the wrapping function of any real number t with $\frac{\pi}{2}<t<\pi$, if, $W(t)=W\left(\frac{14\pi}{3}\right)=P(x,y)$ then $x+y$ is equal to:

a) $\frac{\sqrt{3}+1}{2}$
b) $\frac{1-\sqrt{3}}{2}$
c) 0
d) $\frac{\sqrt{3}-1}{2}$
e) 1

15) The range for the function $y=-4\csc\left(2x+\frac{\pi}{2}\right)+3$ is equal to

a) $[-7,1]$
b) $(-\infty,-7]\cup[1,\infty)$
c) $(-\infty,-1]\cup[7,\infty)$
d) $(-\infty,-7]\cup[7,\infty)$
e) $[-7,7]$

16) The number of vertical asymptotes of $y=\tan\left(\frac{\pi}{2}+2x\right)$ over the interval $[0,\pi]$ is equal to:

a) 3
b) 4
c) 2
d) 1
e) 5

17) The graph of the function $y=3\cos 3(x-\pi)$, where $\pi<x<\frac{5\pi}{3}$ lies above the *x-axis* on the interval:

a) $\left[\pi,\frac{7\pi}{6}\right)\cup\left(\frac{4\pi}{3},\frac{3\pi}{2}\right]$

b) $\left[\pi,\frac{7\pi}{6}\right)\cup\left(\frac{3\pi}{2},\frac{5\pi}{3}\right]$

c) $\left(\frac{7\pi}{6},\frac{4\pi}{3}\right)\cup\left(\frac{3\pi}{2},\frac{5\pi}{3}\right]$

d) $\left(\frac{7\pi}{6},\frac{3\pi}{2}\right)$

e) $\left[\pi,\frac{5\pi}{3}\right]$

18) If the amplitude of a periodic function equals to $\frac{9}{4}$, and given that the range of the function is $\left[k-\frac{1}{2},2k+\frac{5}{2}\right]$, where $k>0$, then the value of k is:

a) 6

b) 3

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

d) 9

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

19) The expression $\sin 13^\circ \sin 73^\circ + \sin 77^\circ \sin 17^\circ$ is equal to:

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

b) $\frac{1}{2}$

c) $-\frac{1}{2}$

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

e) $\sqrt{3}$

20) Given that $\tan\alpha = -\frac{3}{4}, \alpha$ in Qadrant II, $\cos\beta = \frac{4}{5}$ with β in Quadrant IV then $\sin(\alpha+\beta)$ is equal to:

a) $\frac{24}{25}$

b) $\frac{5}{7}$

c) $-\frac{5}{7}$

d) $-\frac{24}{25}$

e) $\frac{1}{20}$

The End of Practice Exam MATH002

The answers for the practice exam

Question Number	Correct Choice
1	C
2	E
3	A
4	D
5	D
6	E
7	C
8	C
9	D
10	D
11	B
12	D
13	D
14	D
15	C
16	A
17	B
18	E
19	B
20	A