1) An equation of the line through the points $(-3, 4)$ and $(2, -1)$ is
   $a)$ $y = -x + 1$
   $b)$ $y = -x - 1$
   $c)$ $y = x + 1$
   $d)$ $y = x - 1$

2) Given $f(x) = x^2 - 5x - 6$ and $g(x) = x + 1$, the interval(s) when $f(x) \geq g(x)$ is (are)
   $a)$ $(-\infty, -1] \cup [7, \infty)$ $b)$ $[-1, 7]$
   $b)$ $(-\infty, 0] \cup [8, \infty)$ $d)$ $[0, 8]$

3) The domain of $f(x) = \frac{x}{x-3}$ is
   $a)$ $(-\infty, 0) \cup (3, \infty)$ $b)$ $(-\infty, 0) \cup (0, \infty)$
   $c)$ $(-\infty, 3) \cup (3, \infty)$ $d)$ $(-\infty, -3) \cup (0, \infty)$

4) The range of $g(x) = \sqrt{x^2 - 4}$ is
   $a)$ $(-\infty, 2]$ $b)$ $[2, \infty)$ $c)$ $(-\infty, 0]$ $d)$ $[0, \infty)$

5) The range of $h(x) = 4\,cos\left(x - \frac{\pi}{4}\right) + 3$ is
   $a)$ $[-4, 4]$ $b)$ $[-3, 3]$
   $c)$ $[-1, 7]$ $d)$ $[-7, 1]$

6) The value(s) of x satisfying $|2x - 3| = 5$ is (are)
   $a)$ $-1, 4$
   $b)$ $-4, 1$
   $c)$ 4 only
   $d)$ 1 only

7) The value(s) of x satisfying $\sqrt{2x + 3} = x$ is (are)
   $a)$ $-1, 3$
   $b)$ $1, -3$
   $c)$ -1 only
   $d)$ 3 only

8) The value(s) of x satisfying $|x + 1| + |x - 3| = 8$ is (are)
   $a)$ 4 or 0
   $b)$ -4 or -2
   $c)$ 3 or -5
   $d)$ -3 or 5

9) $(3 - 2i)(-4 - 3i) =$
   $a)$ $-12 + 5i$

$b)\ -12-7i$
$c)\ -18-i$
$d)\ -6-i$

10) The range of $f(x)=-3x^2-6x+1$ is
$a)\ [4,\infty)$ $b)\ (-\infty,4\,]$ $c)\ (-\infty,\ -1\,]$ $d)\ [-1,\infty)$

11) Given the polynomial $P(x)=x(x-3)(x^2+4)$, then $P(x)\geq 0$ on the interval(s)
$a)\ [0,\ 3\,]$
$b)\ (-\infty,0\,]\cup[\,3,4\,]$
$c)\ (-\infty,\ -4\,]\cup[\,3,\infty)$
$d)\ (-\infty,0\,]\cup[\,3,\infty)$

12) Given the function $f(x)=\frac{2x}{x-1}$, the equation of the horizontal asymptote is
$a)\ y=2$ $b)\ y=1$ $c)\ y=-1$ $d)\ y=0$

13) Given the function $f(x)=\frac{x^2-1}{x-1}$, its graph has a "hole" when $x=$
$a)\ 0$ $b)\ 1$ $c)\ -1$ $d)$ There is no hole.

14) The solutions of $\sqrt{5+2x}>x+1$ are on the interval
$a)\ \left[-\frac{5}{2},\ 2\right]$
$b)\ \left[-\frac{5}{2},\ -2\right]$
$c)\ \left[-2,\ \frac{5}{2}\right]$
$d)\ \left[2,\frac{5}{2}\right]$

15) The function $f(x)=e^{-x}+1$ has an intercept at
$a)\ (0,1)$ $b)\ (1,0)$
$c)\ (0,2)$ $d)\ (0,0)$

16) The value(s) of x satisfying $log_4\,(x+2)=log_4\,x^2$ is (are)
$a)\ 2$ and -1
$b)\ -2$ and 1
$c)\ 2$ only
$d)\ 1$ only

17) The solutions of the system $\begin{cases} x+y=3 \\ y=x^2-3 \end{cases}$ occur when $\underline{\mathbf{y}}$ equals
$a)\ 2$ and 1
$b)\ -3$ and 6
$c)\ 1$ and 6
$d)\ -2$ and 3

18) An expression giving us all the angles coterminal with $40°$ is
$a)\ \frac{2\pi}{9}+2n\pi$

$b)\ \frac{2\pi}{9} + n\pi$
$c)\ \frac{\pi}{9} + 2n\pi$
$d)\ \frac{\pi}{9} + n\pi$

19) $sec\ \frac{\pi}{12} =$
$a)\ \sqrt{6} - \sqrt{2}$
$b)\ \sqrt{2} - \sqrt{6}$
$c)\ \sqrt{6} + \sqrt{2}$
$d)\ -\sqrt{6} - \sqrt{2}$

20) Given $f(x) = 4\,sin\,3\big(x - \frac{\pi}{4}\big)$, its period is
$a)\ 4$ $b)\ 3$ $c)\ \frac{\pi}{2}$ $d)\ \frac{2\pi}{3}$

21) If $sin\,A = -\frac{\sqrt{3}}{2}$ with A in QIV, then $sin\,\frac{A}{2} =$
$a)\ \frac{1}{2}$
$b)\ -\frac{1}{2}$
$c)\ \frac{\sqrt{3}}{2}$
$d)\ -\frac{\sqrt{3}}{2}$

22) The area of a rectangle is 48 sq. yds. If the length if four more than twice the width, then the **width** is
$a)\ 4$
$b)\ 6$
$c)\ 8$
$d)\ 12$

23) In simplified form, $\sqrt{-20}$ is
$a)\ 2i\sqrt{5}$ $b)\ -2i\sqrt{5}$
$c)\ 4i\sqrt{5}$ $d)\ 2i\sqrt{10}$

24) The vertex of the parabola $y = -3(x-5)^2 + 2$ is
$a)\ (5, 2)$ $b)\ (5, -2)$ $c)\ (-5, 2)$ $d)\ (-5, -2)$

25) One value of x satisfying $6x^2 - 19x - 7 = 0$ is
$a)\ -\frac{7}{2}$
$b)\ -\frac{7}{6}$
$c)\ -\frac{6}{7}$
$d)\ -\frac{1}{3}$

26) The solutions of $x^2 + 2x = 5$ are
$a)\ 1 \pm \sqrt{6}$
$b)\ -1 \pm \sqrt{6}$

$c)\ 2 \pm 2i$
$d)\ -2 \pm 2i$

27) The height in feet of a rock thrown upward from a building can be determined with $s(t) = -16t^2 + 40t + 80$ where t is the number of seconds since the rock is thrown. What is the highest height that the rock attains?
$a)\ 80\ ft$
$b)\ 105\ ft$
$c)\ 120\ ft$
$d)\ 180\ ft$

28) One of the zeros of $P(x) = 2x^3 + 3x^2 - 10x - 15$ is
$a)\ \sqrt{5}$
$b)\ \frac{3}{2}$
$c)\ -\sqrt{7}$
$d)\ 0$

29) If a, b, and c are real numbers and the polynomial $P(x)$ can be expressed as $P(x) = (x^2 - 11)(ax^2 + bx + c)$ where $b^2 - 4ac = -2$, then the roots are
a) 4 irrational roots
b) 2 irrational and 2 rational roots
c) 2 rational and 2 imaginary roots
d) 2 irrational and 2 imaginary roots

30) Given $f(x) = x^3 - 8$, its inverse, $f^{-1}(x) =$
$a)\ x - 2$
$b)\ \frac{1}{x^3-8}$
$c)\ \sqrt[3]{x^3 - 8}$
$d)\ \sqrt[3]{x + 8}$

31) If $8^{2x+1} = 4^{1-x}$, then $x =$
$a)\ -\frac{1}{8}$
$b)\ \frac{1}{7}$
$c)\ 0$
$d)\ 2$

32) $log_9 \frac{\sqrt{27}}{3} =$
$a)\ \frac{1}{4}$
$b)\ \frac{1}{2}$
$c)\ \frac{1}{9}$
$d)\ -3$

33) $log \frac{x\sqrt{x+1}}{x-3} =$
$a)\ log\, x + \frac{1}{2} log\, x + \frac{1}{2} log\, 1 - log\, x + log\, 3$

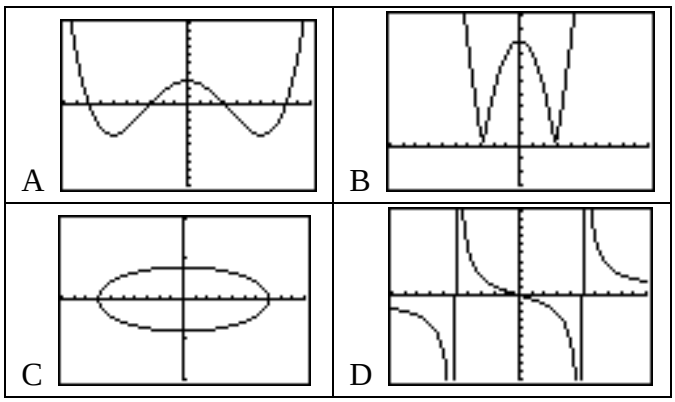
$b)\ \log x + \frac{1}{2}\log(x+1) + \log(x-3)$
$c)\ \log x - \frac{1}{2}\log(x+1) - \log(x-3)$
$d)\ \log x + \frac{1}{2}\log(x+1) - \log(x-3)$

34) If $A = 33°,\ B = 40°$ and $c = 10\,m.,$ what is the measure of b?
$a)\ 40.32\,m.$
$b)\ 6.72\,m.$
$c)\ 14.88\,m.$
$d)\ 2.48\,m.$

35) The graph of $3x^2 - 3y^2 + 6x - 2y + 8 = 0$ is a(n)
a) circle b) ellipse c) hyperbola d) parabola

36) The center of the graph of $x^2 + y^2 - 8x + 22y - 11 = 0$ is
$a)\ (-8, 22)$
$b)\ (8, -22)$
$c)\ (-4, 11)$
$d)\ (4, -11)$

37 – 40 Consider the following graphs and match them with their equations, below. Place the corresponding letter on the blank in front of each equation.



_____37) The graph of $y = \frac{x^2}{50} + \frac{y^2}{25} = 1$

_____38) The graph of $y = |\,8 - x^2\,|$

_____39) The graph of $y = \frac{12x}{x^2-25}$

_____40) The graph of $y = 0.005\left(x^4 - 73x^2 + 576\right)$