Non-calculator

1) Consider the equation $2H + \frac{3Y^3}{\sqrt{x}} = -\frac{1}{H}$, write X in terms of Y and H.

A. $X = \frac{9y^3H^2}{(-1-2H^2)^2}$

B. $X = \frac{3y^4H^3}{(-1-2H^2)^2}$

C. $X = \frac{3y^4H^2}{(-H-2H^2)^2}$

D. $X = \frac{9y^4H^2}{(-1-2H^2)^2}$

$\frac{3y^2}{\sqrt{x}} = -\frac{1}{H} - \frac{2H \times H}{1 \times H}$

$\frac{3y^2}{\sqrt{x}} = \frac{-1-2H^2}{H}$

$\sqrt{x} = \left(\frac{3y^2H}{-1-2H^2}\right)^2$

$x = \frac{9y^4H^2}{(-1-2H^2)^2}$

2) Given the function f defined by $f(x) = 4x^2 - 8x + 3$, what are the coordinates of its vertex?

A. (1,-1)

B. (-1,15)

C. (2,3)

D. (-2,35)

$x_v = \frac{-b}{2a}$

$a = 4$

$b = -8$

$c = 3$

$= \frac{+8}{2(4)}$

$= \frac{8}{8}$

$= 1$

(x, y)

$x_v = \frac{-b}{2a}$ x-vertex abscissa axis of symm

y-vertex ordinate

3) If $y > 3x - 1$, and $3x > 5$, which of the following is true>

A. $y > 3$

B. $y > 4$

C. $y < 7$

D. $y < 4$

$y > 5 - 1$

$y > 4$

4) $\sqrt{x^2+4}-3=x+4$

Which of the following is the solution of the equation above?

A. $x=-\frac{45}{14}$

B. $x=-\frac{14}{45}$

C. $x=\frac{14}{45}$

D. $x=\frac{45}{14}$

$\sqrt{x^2+4}=(x+7)^2$

$x^2+4=x^2+2(7)(x)+(7)^2$

$x^2+4=x^2+14x+49$

$4=14x+49$

$-45=14x$

$-\frac{45}{14}$

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$(a+b)^2=a^2+2ab+b^2$

$(a-b)^2=a^2-2ab+b^2$

$a^2-b^2=(a-b)(a+b)$

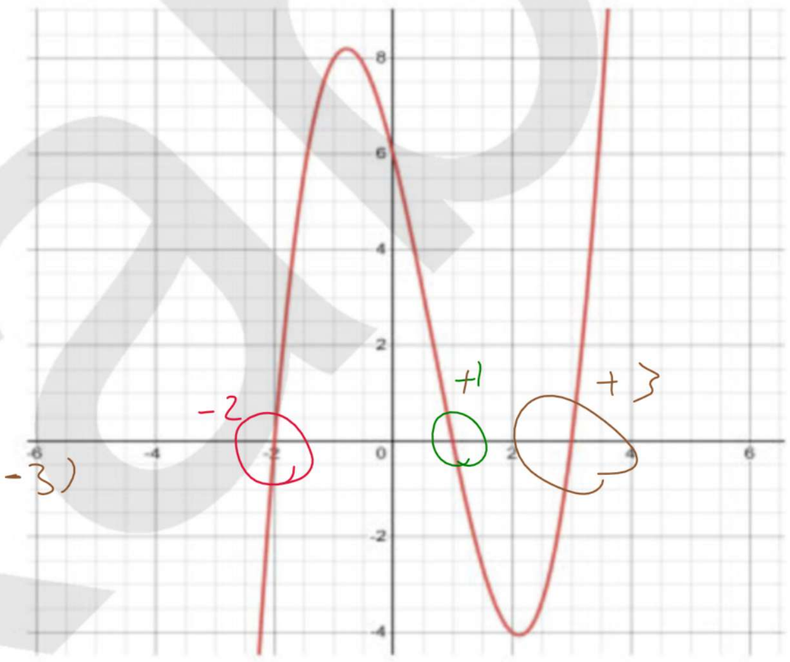
5) Which of the following equations is represented in the graph above?

A. y= (x-2)(x+3)(x+1)

B. y= x(x+1)(x-2)

C. y= (x+2)(x-3)(x-1)

D. y= (x-2)(x-3)(x+1)



$(x+2)(x-1)(x-3)$

6) $2a+3(4a-5)+2=3(a+3)$

Solve the equation above for a.

A. a=1

B. a=2

C. a=4

D. a=11

$2a+12a-15+2=3a+9$

$14a-13=3a+9$

$11a=22$

$\frac{22}{11}$

$a=2$

7) which of the following is/are not a solution for $|2x-1|>3$?

I. X=-2
II. X= 0
III. X=2

A. I only
B. II only
C. I and II
D. II and III

$|x| = 5$

$x = 5 \qquad x = -5$

$|x| < 5$

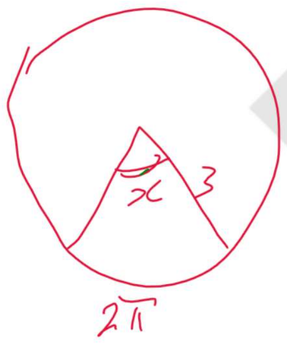
$-5 < x < 5$

$|x| > 5$

$x > 5 \quad , \quad x < -5$

8) In this figure, the radius of the circle is 3 cm, and the minor arc AB has a length of 2π cm. What is the measure of angle AOB? (figure is not drawn to scale)

A. 60°
B. 90°
C. 120°
D. 135°



Part / Total

$\frac{x}{2\pi} = \frac{360}{2\pi(3)}$

$\frac{2\pi \times 360}{2\pi(3)} = 120$

9) If $x=2a$, and $a=-\frac{1}{4}$, what is the value of $2x+5$?

A. 1
B. 4
C. 6
D. 8

$x = \frac{2}{1}\left(-\frac{1}{4}\right)$

$\frac{-2}{4} = -\frac{1}{2}$

$2\left(-\frac{1}{2}\right) + 5$

$-1 + 5$

$= 4$

$5y - 3x + 6 = -1$

$5y = \frac{3}{5}x - \frac{7}{5}$

10) Given the line with equation $5y-3(x-2)= -1$, which of the following statements is true?

A. The slope of the line is 3/5 and the line is decreasing.

B. The slope of the line is -3/5 and the line is decreasing.

C. The slope of the line is 3/5 and the line is increasing.

D. The slope of the line is -3/5 and the line is increasing.

$y = mx + b$

slope

y-int

2 points $\frac{y-y}{x-x}$

Graph: $\frac{rise}{run}$

Equ: no' beside x

+ve

-ve

zero

/ undefined

11) If $i^2 = -1$, what is the sum of $4+7i$ and $-2+7i$?

A. $1+14i$

B. 2

C. $14i$

D. $2+14i$

$4+7i + -2+7i$

$2+14i$

12) What is the slope of the line perpendicular to the line of equation $3y+x=15$?

A. -1/3

B. 1/3

C. 3

D. 6

$3y = -\frac{1}{3}x + \frac{15}{3}$

$m = -\frac{1}{3}$

$m_1 = \frac{3}{1}$

$= 3$

13) If $x^2=b^6$, and $y=b^5$, then $(xy)^{12} =$

A. b^8

B. b^{20}

C. b^{96}

D. b^{132}

$x^2 = b^{\frac{6}{2}}$

$x = b^3$

$(b^3 \cdot b^5)^{12}$

$(b^{3+5})^{12}$

$(b^8)^{12} = b^{8\times12} = b$

$8\times2 = 16$

14) Given the function g defined by $g(x)= -3x^2+6x+1$, which of the following statements is/are true?

I. The graph of g concaves upwards.

II. The axis of symmetry of the graph is at the positive side of the x-axis.

III. The graph of g reaches a minimum value.

A. I only

B. II only

C. I and III

D. I,II, and III

down.

x^2 ∪ ← Concave upwards

$-x^2$ ∩ ← Concave downwards

15) If $f(x)=x^2-4$, and $g(x)=3x-1$, then $f(g(-2))=$

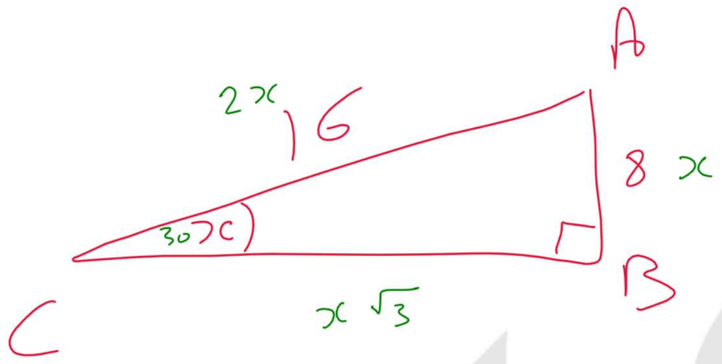
A. 44
B. 45
C. 49
D. 53

$g(-2)=3(-2)-1$
$=-6-1$
$=-7$

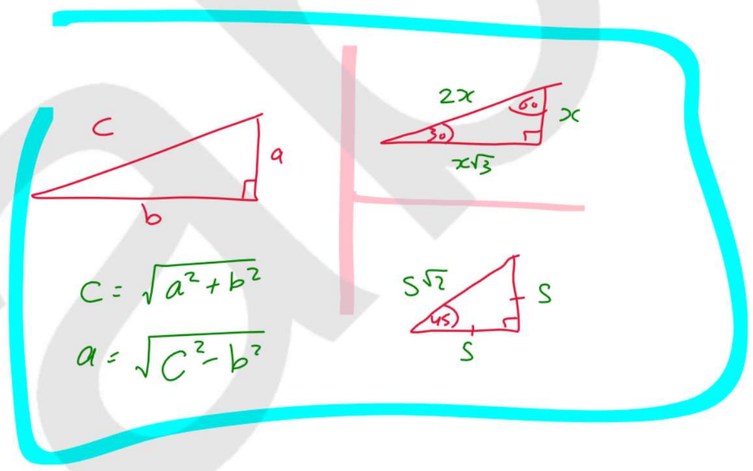
$f(-7)=(-7)^2-4$
$=49-4$
$=45$

16) In the figure above, ABC is a right triangle at B, such that AC = 16 cm. if $AB=\frac{AC}{2}$, and m<ACB = x°, then x=

A. 30
B. 45
C. 60
D. 75



$AB=\frac{16}{2}$
$=8$



17) $x+2y=-1$
$2x=y+8$

The value of x that satisfies the system of equations above is:

Cancel y

A. 1
B. 2
C. 3
D. 4

$x+2y=-1 \Rightarrow x+2y=-1$
$2x(2x-y=8) \Rightarrow 4x-2y=16$ (+)
$5x=\frac{15}{5}$
$x=3$

18) The coefficient of the x term in the expansion of $(2-3x)(x^2+4x+1)$ is:

A. 3
B. 5
C. 8
D. 11

$8x-3x$
$=5x$