

1. max, (0, 2)
min (1.83, -10.32)

2. D-6

3. $\sqrt{y-3} + 6 = -4$
 $\quad \quad \quad -6 \quad \quad -6$

$\sqrt{y-3} = -10$

$y-3 = 100$

$y = 103$

4 b $f(x) = -(x-3)^2 - 1$

↳ Down 1
↳ Right 3
↳ flip over x

5. 6 (highest exponent)

6. $4x^2 - 8x + 3 = 0$

must use swing
since $a > 1$

~~$\begin{array}{ccc} 12 & & \\ -2 & \times & -6 \\ -8 & & \end{array}$~~

$(x - \frac{2}{4})(x - \frac{6}{4})$

$(x - \frac{1}{2})(x - \frac{3}{2})$

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

$\rightarrow 2x - 1 = 0$

$x = \frac{1}{2}$

OR USE QUADRATIC FORMULA

$2x - 3 = 0$

$x = \frac{3}{2}$

$\frac{8 \pm \sqrt{64 - 4(3)(4)}}{2(4)}$

$\frac{1}{2} + \frac{3}{2} = \frac{4}{2} = 2$ 2

$\frac{8 \pm \sqrt{16}}{8} = \frac{8 \pm 4}{8} \Rightarrow x = \frac{12}{8} = \frac{3}{2}$
 $x = \frac{4}{8} = \frac{1}{2}$

2

7. $p(x) = 2x^3 + x^2 + 3x + a$

$p(1) = 15$

so $2(1)^3 + (1)^2 + 3(1) + a = 15$

$2 + 1 + 3 + a = 15$

$a = 15 - 6 = 9$

$p(x) = 2x^3 + x^2 + 3x + 9$

-3	2	1	3	9
	↓	-6	15	-54
	2	-5	18	45

C

8 a

9. $V = L \cdot W \cdot H$

$(12-x)(x-8)x$

graph.

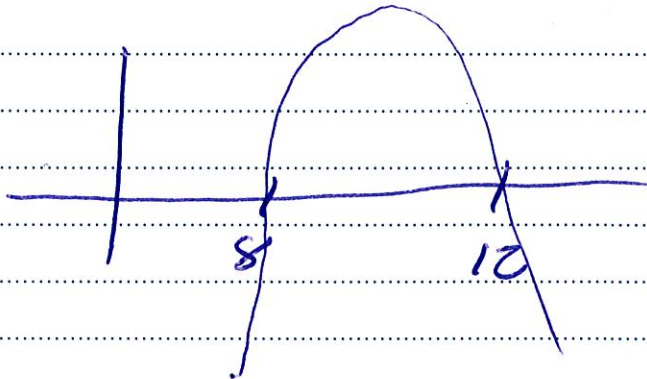
using the multiple choice answers set

the x -min = 0

x -max = 20

check the x -axis for where x values start & end.

C



10. (D), check the graphs of each function

I + III, have range $[4, \infty)$

$$11. \sqrt{-2-x} = x+2$$

$$-2-x = (x+2)^2$$

$$-2-x = x^2+4x+4$$

$$+2+x \quad +x+2$$

$$0 = x^2+5x+6$$

factor $(x+2)(x+3)$

$$x = -2$$

$$x = -3$$

now check solutions.

$$\sqrt{-2-(-2)} = -2+2$$

$$\sqrt{-2+2} = 0$$

$$0 = 0 \quad \checkmark$$

$$\sqrt{-2-(-3)} = -3+2$$

$$\sqrt{+1} = -1$$

$$1 = -1 \quad \times$$

EXCLUDED

$$12. 3x^2 + 5x = 2x - 7$$

$$3x^2 + 3x + 7 = 0$$

$$\frac{-3 \pm \sqrt{9 - 4(3)(7)}}{6} = \frac{-3 \pm \sqrt{-75}}{6} = \frac{-3 \pm 5i\sqrt{3}}{6}$$

$$= \frac{-3}{6} \pm \frac{5i\sqrt{3}}{6}$$

$$= -\frac{1}{2} \pm \frac{5i\sqrt{3}}{6}$$

(B)

$$13 \quad S = 3\sqrt{4x}$$

$$\frac{66}{3} = \frac{3\sqrt{4x}}{3} \Rightarrow 22 = \sqrt{4x}$$

$$\frac{484}{4} = \frac{4x}{4} \quad \left. \begin{array}{l} \text{square} \\ \text{both} \\ \text{sides} \end{array} \right\}$$

$$1) \quad 121 = x$$

14. \mathbb{B} even degree, negative out front

15 just find vertex of each equation

$$y = |x-1| + 4$$

$$V = (1, 4)$$

$$y = x^2 + 4x + 4$$

$$V = (-2, 0)$$

$$16. (6-4i)(-1+6i) \quad -6 + 36i + 4i - 24(i^2)$$

$$\mathbb{B} \quad \begin{array}{l} -6 + 40i + 24 \\ 18 + 40i \end{array}$$

17. $\mathbb{D} \rightarrow$ enter data in L_1 & L_2

1 54

2 70

3 54

find quadratic regression equation

18. B (graph each).

Constructed Response.

1. ^a 5 roots.

b $x = -5, 0, 3$

Graph to find real roots.

$$x(x^4 + 2x^3 - 11x^2 + 8x - 60)$$

$$\begin{array}{r|rrrrr} -5 & 1 & 2 & -11 & 8 & -60 \\ & \downarrow & -5 & 15 & -20 & 60 \\ \hline & 1 & -3 & 4 & -12 & 0 \end{array}$$

$$\begin{array}{r|rrrr} 3 & 1 & -3 & 4 & -12 \\ & \downarrow & 3 & 0 & 12 \\ \hline & 1 & 0 & 4 & 0 \end{array}$$

$$x^2 + 4 = 0$$

$$x^2 = -4$$

c $x = \pm 2i$

20. $x^2 - 8x + 19$

graph to find vertex

a $y = (x-4)^2 + 3$

(4, 3)

b Left 4 & down 3.