7.2 pg 375 → 1-10 *6a,c,e *8a,c,e

1(a)

x	f(x)	|f(x)|
-2	-3	3
-1	-1	1
0	1	1
1	3	3
2	5	5

b)

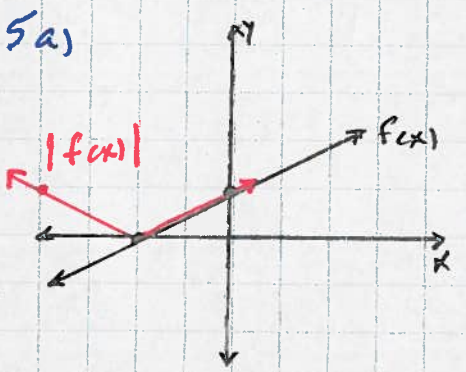
x	f(x)	|f(x)|
-2	0	0
-1	-2	2
0	-2	2
1	0	0
2	4	4

2. $(-5,-8)$ on $f(x)$ $(-5,8)$ on $|f(x)|$

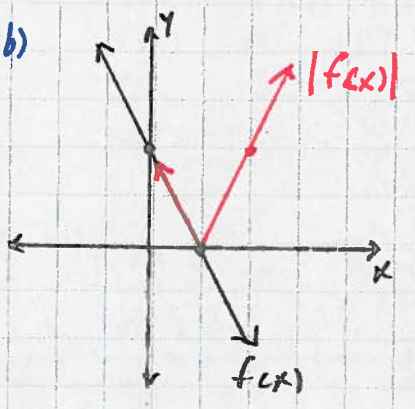
3. $f(x)$ x int $(3,0)$ y int $(0,-4)$ $|f(x)|$ x int $(3,0)$ y int $(0,4)$

4. $f(x)$ x int $(-2,0),(7,0)$ y int $(0,-3/2)$ $|f(x)|$ $(-2,0)$ $(7,0)$ x int y int $(0,3/2)$

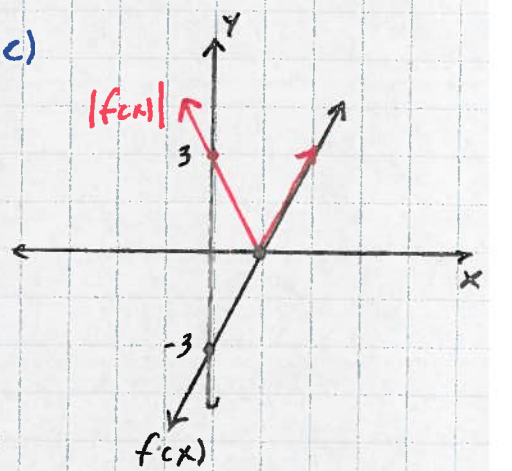
5a)



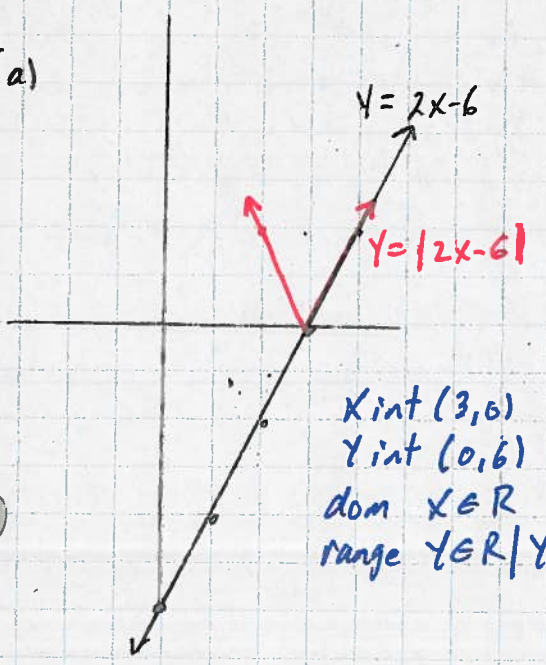
b)



c)

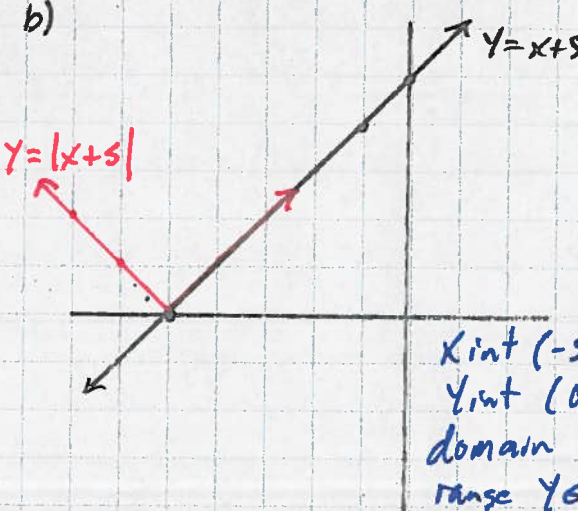


6a)



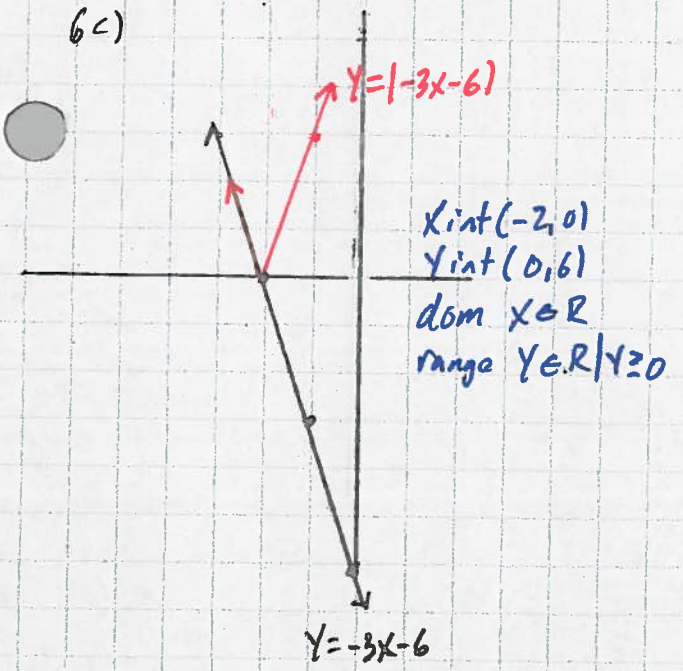
x int $(3,0)$
y int $(0,6)$
dom $x \in R$
range $y \in R \mid y \geq 0$

b)



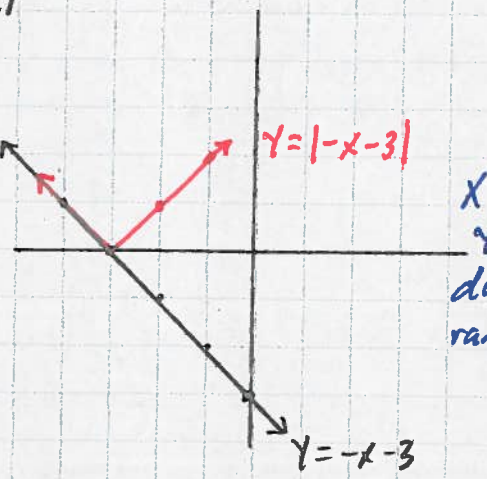
x int $(-5,0)$
y int $(0,5)$
domain $x \in R$
range $y \in R \mid y \geq 0$

6c)



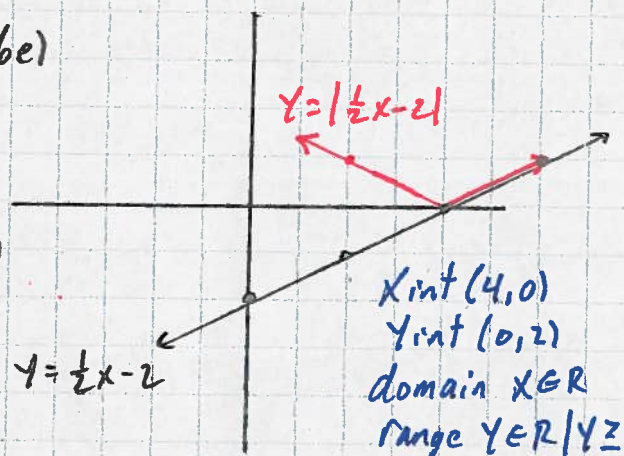
Xint (-2, 0)
Yint (0, 6)
dom $x \in R$
range $y \in R | y \geq 0$

6d)



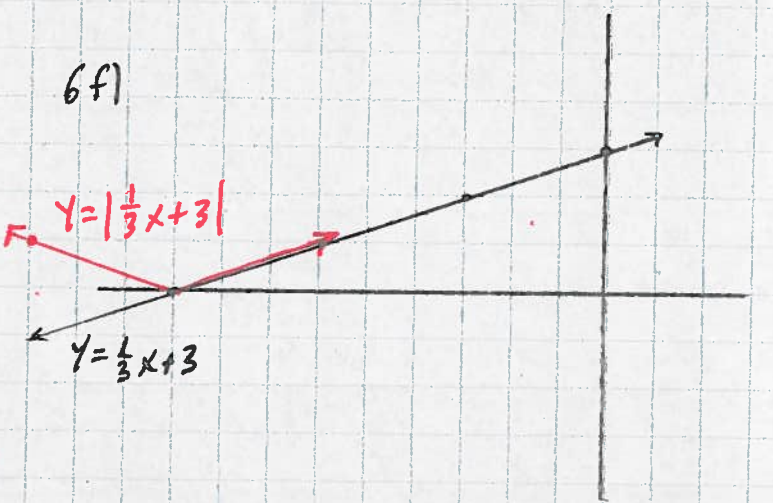
Xint (-3, 0)
Yint (0, 3)
domain $x \in R$
range $y \in R | y \geq 0$

6e)

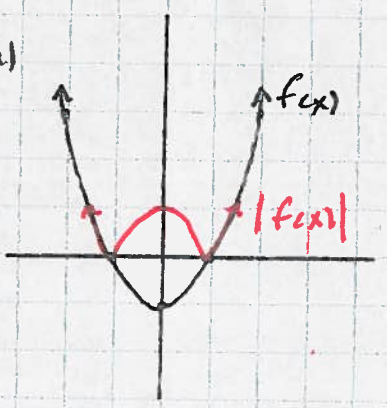


Xint (4, 0)
Yint (0, 2)
domain $x \in R$
range $y \in R | y \geq 0$

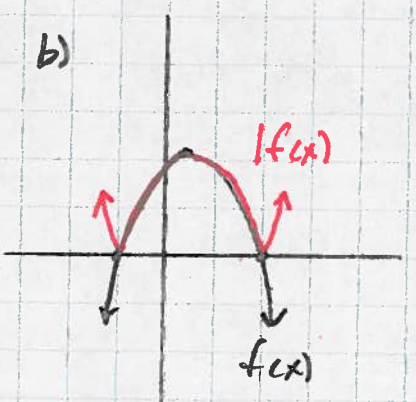
6f)



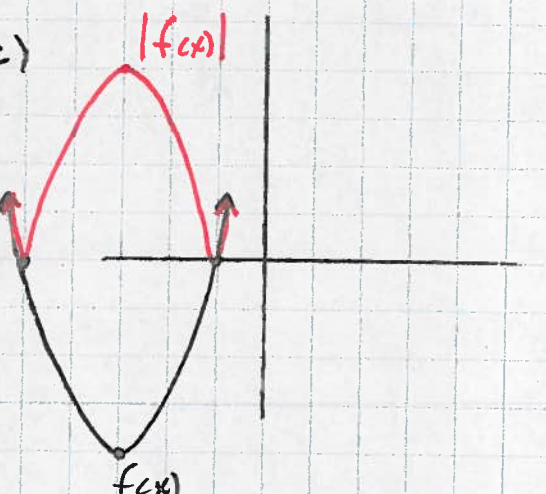
7a)



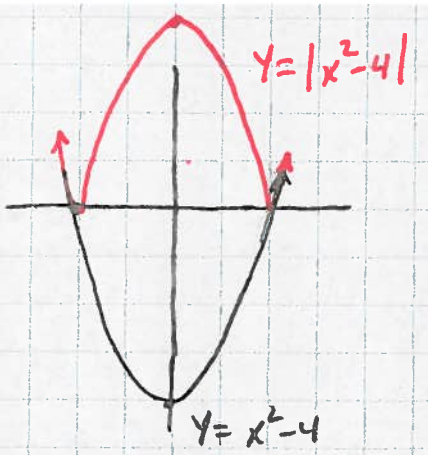
b)



c)

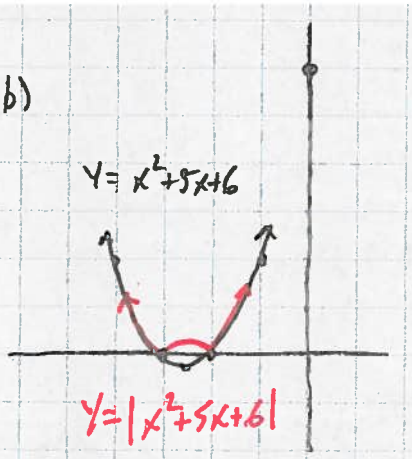


8a)



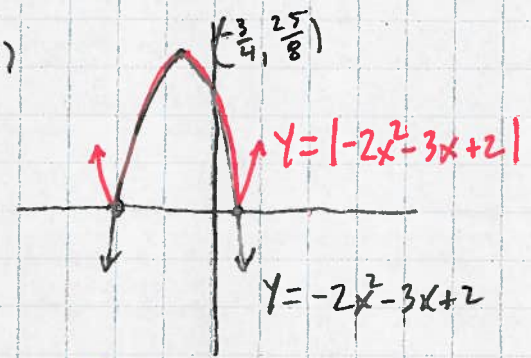
x int (-2,0) (2,0)
y int (0,4)
domain $x \in R$
range $y \in R | y \geq 0$

b)



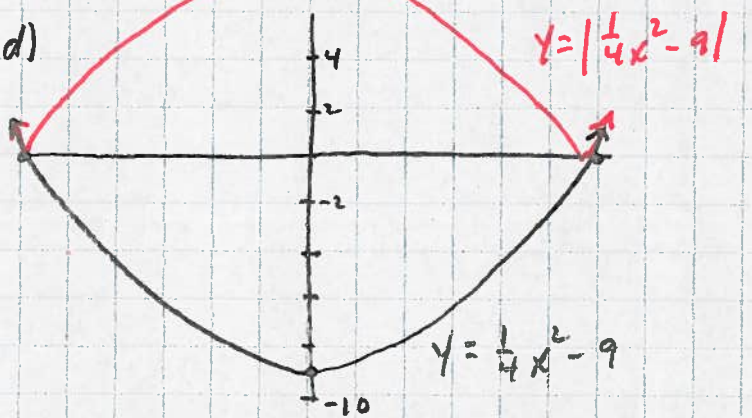
x int (-2,0) (-3,0)
y int (0,6)
domain $x \in R$
range $y \in R | y \geq 0$

c)



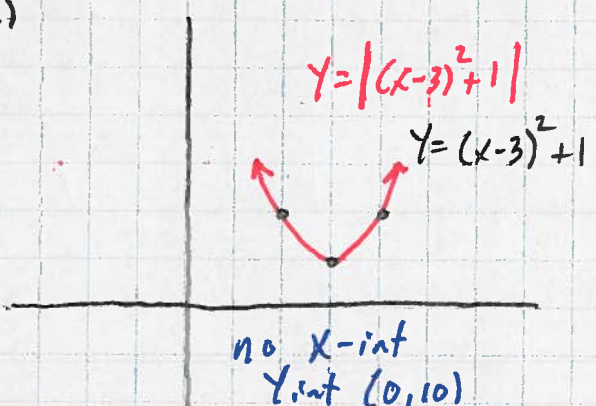
x int (-2,0) (0.5,0)
y int (0,2)
domain $x \in R$
range $y \in R | y \geq 0$

d)



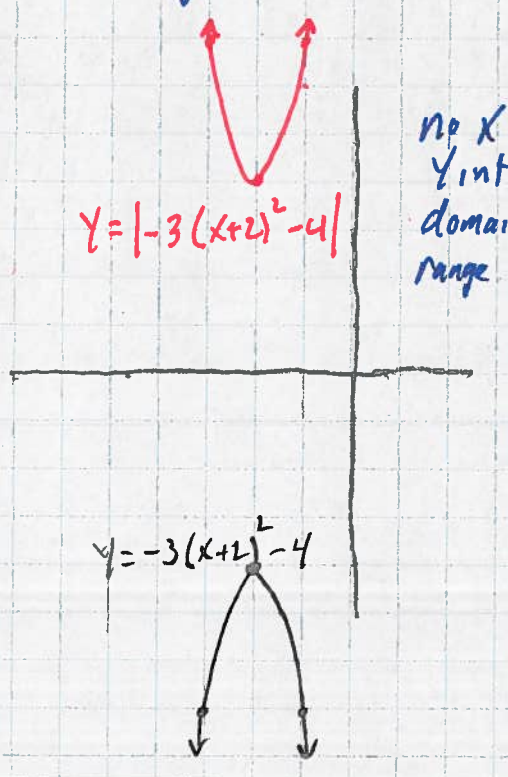
x int (6,0) (-6,0) y int (0,9)
dom $x \in R$ range $y \in R | y \geq 0$

e)



no x-int
y int (0,10)
domain $x \in R$
range $y \in R | y \geq 1$

f)



no x int
y int (0,16)
domain $x \in R$
range $y \in R | y \geq 4$

9a) $y = \begin{cases} 2x-2 & \text{for } x \geq 1 \\ 2-2x & \text{for } x < 1 \end{cases}$

b) $y = \begin{cases} 3x+6 & \text{for } x \geq -2 \\ -3x-6 & \text{for } x < -2 \end{cases}$

c) $y = \begin{cases} \frac{1}{2}x-1 & \text{for } x \geq 2 \\ 1-\frac{1}{2}x & \text{for } x < 2 \end{cases}$

10 a) $y = \begin{cases} 2x^2-2 & \text{for } x < -1 \text{ or } x > 1 \\ 2-2x^2 & \text{for } -1 \leq x \leq 1 \end{cases}$

b) $y = (x-1.5)^2 - 0.25$ for $x \leq 1$ or $x \geq 2$

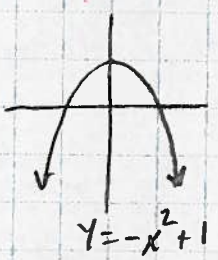
$-[(x-1.5)^2 - 0.25]$ for $1 < x < 2$

c) $y = \begin{cases} 3(x-2)^2-3 & \text{for } x \leq 1 \text{ or } x \geq 3 \\ 3-3(x-2)^2 & \text{for } 1 < x < 3 \end{cases}$

11 a) $y = \begin{cases} x-4 & \text{for } x \geq 4 \\ 4-x & \text{for } x < 4 \end{cases}$

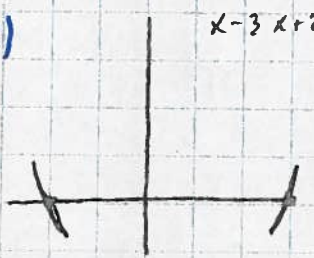
b) $y = \begin{cases} 3x+5 & \text{for } x \geq -5/3 \\ -3x-5 & \text{for } x < -5/3 \end{cases}$

c)



$y = \begin{cases} -x^2+1 & \text{for } -1 \leq x \leq 1 \\ -1+x^2 & \text{for } x < -1 \text{ or } x > 1 \end{cases}$

d)

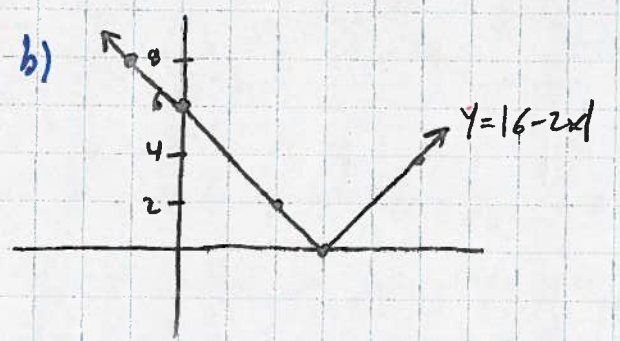


$y = \begin{cases} x^2-x-6 & \text{for } x \leq -2 \text{ or } x \geq 3 \\ -x^2+x+6 & \text{for } -2 < x < 3 \end{cases}$

12 a)

x	$\lvert 6-2x \rvert$
-1	8
0	6
2	2
3	0
5	4

b)



c) domain $x \in \mathbb{R}$

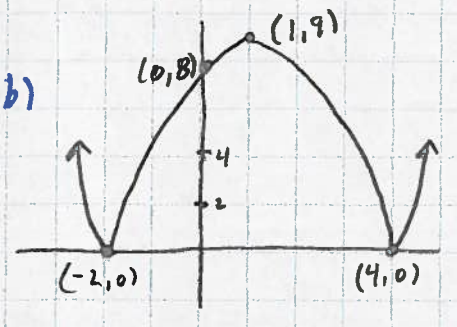
range $y \in \mathbb{R} \mid y \geq 0$

d) $y = \begin{cases} 6-2x & \text{for } x \leq 3 \\ 2x-6 & \text{for } x > 3 \end{cases}$

13. $g(x) = |(x-4)(x+2)|$
$g(x) = |x^2 - 2x - 8|$

a) Y int $(0, +8)$
X int $(4,0)$ $(-2,0)$

b)



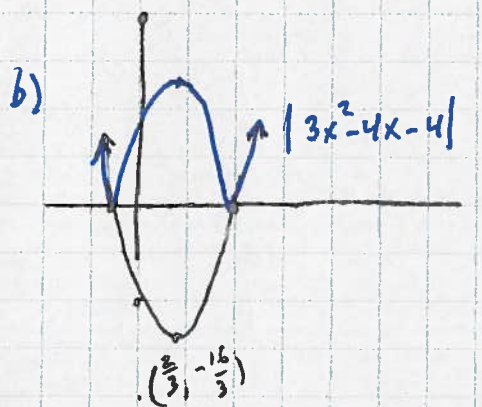
c) domain $x \in R$
range $Y \in R \mid Y \geq 0$

d) $Y = \begin{cases} x^2 - 2x - 8 & \text{for } x \leq -2 \text{ or } x \geq 4 \\ -x^2 + 2x + 8 & \text{for } -2 < x < 4 \end{cases}$

14. $|(3x+2)(x-2)|$

a) $(-2/3, 0)$ $(2,0)$ X int $(0,4)$ Y int

b)

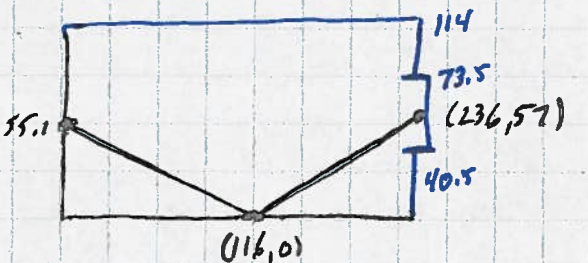


c) domain $x \in R$ range $Y \in R \mid Y \geq 0$

d) $Y = \begin{cases} 3x^2 - 4x - 4 & \text{for } x \leq -2/3 \text{ or } x \geq 2 \\ -3x^2 + 4x + 4 & \text{for } -2/3 < x < 2 \end{cases}$

15 Michael is correct. $p(x) = 2x^2 - 9x + 10$ vertex $(9/4, -1/8)$
$q(x) = |2x^2 - 9x + 10|$ min $Y = 0$

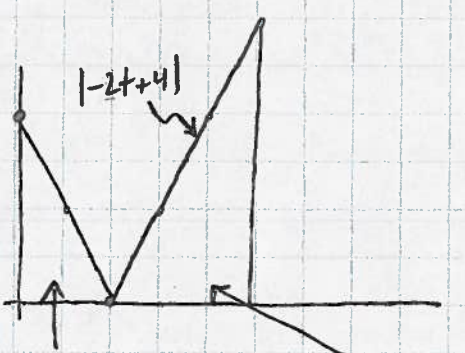
16. $Y = |0.475x - 55.1|$ GDC



(b)

(c) yes height = 57cm
goal from 40.5 - 73.5 cm

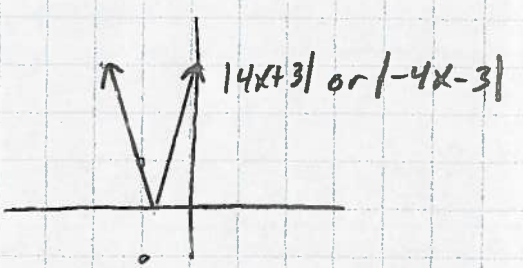
17.



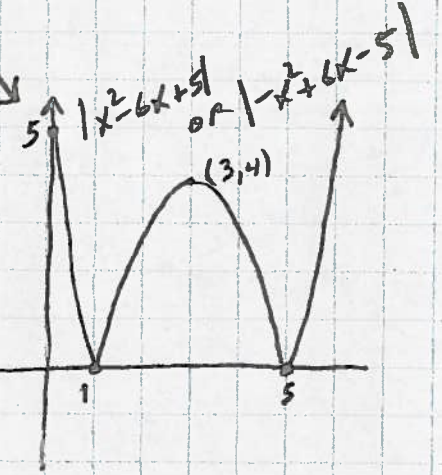
$A_1 = \frac{1}{2}(2)(4) = 4$ $A_2 = \frac{1}{2}(3)(6) = 9$ total area = 13
$\therefore$ distance = 13 m

18 a) $|3x-2|$ and $|-3x+2|$ are the same (let $y = 3x-2$ $\therefore -y = -3x+2$)
$|y| = |-y|$

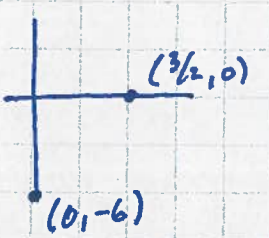
b) $|-4x-3|$ is the same graph as $|4x+3|$

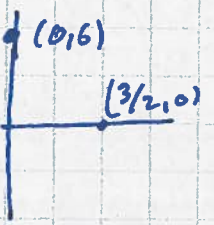


19. $|-x^2+6x-5|$



20.





$(3/2, 0)$ $(0, 6)$

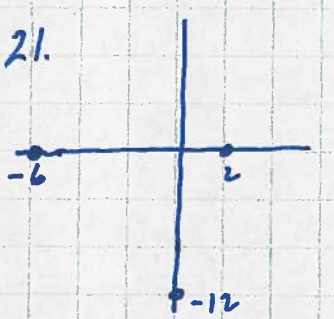
$y = ax + b$
$0 = 3/2\,a + b$
$6 = b$
$0 = 3/2\,a + 6$
$-6 = 3/2\,a$
$-4 = a$

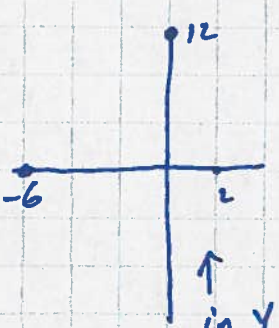
$a = -4, b = 6$

$y = ax + b$
$(3/2, 0)$ $0 = 3/2\,a + b$
$(0, -6)$ $-6 = b$
$0 = 3/2\,a - 6$
$6 = 3/2\,a$
$4 = a$

$a = 4, b = -6$

21.





in $y = ax^2 + bx + c$ this "a" would be negative and $a = 1$ in this question

$y = (x+6)(x-2)$
$y = x^2 + 4x - 12$
$b = 4, c = -12$

22. $y = |x^2|$ and $y = x^2$ are identical as there are no negative values.