Pre-Calculus 11 **Chapter 7 Review** Name: _____Key_____

1. Evaluate each expression.

a) $|5-3\times4|$

$=|5-12|$

$=|-7|$

$=7$

b) $|-6+14|-|-8+2\times3^2|$

$=|8|-|-8+18|$

$=8-|10|$

$=-2$

c) $|9+2(-3)-5(-2)^2|-|7-48\div3|$

$=|9+(-6)-20|-|7-16|$

$=|-17|-|-9|$

$=8$

d) $|5(-3)^2-|-8\times(-2)|-56\div(-7)|$

$=|45-|16|-(-8)|$

$=|45-16+8|$

$=37$

2. Order the number from least to greatest.

a) $8.6, |-7.8|, 7\frac{5}{6}, \left|-\frac{54}{6}\right|, 6.2$

$=6.2, |-7.8|, 7\frac{5}{6}, 8.6, \left|-\frac{54}{6}\right|$

b) $-9.2, |-12.8|, -10\frac{1}{6}, \left|-\frac{84}{12}\right|, |8.1|$

$=-10\frac{1}{6}, -9.2, \left|-\frac{84}{12}\right|, |8.1|, |-12.8|$

3. The heights of Moscrop's Senior Girls Basketball players are 162 cm, 154 cm, 160 cm, 168 cm, 165 cm, 166cm, 158 cm, and 170 cm.
   a) What in the mean height of the players?
   b) Determine the absolute value of the difference between each player's height and the mean. Determine the sum of the values.
   c) Divide the sum by the number of students that were measured.
   d) Interpret the result in part c) in terms of the height of students in this class.

a) $mean = \frac{162+154+160+168+165+166+158+170}{8} = \frac{1303}{8} = 162.875$

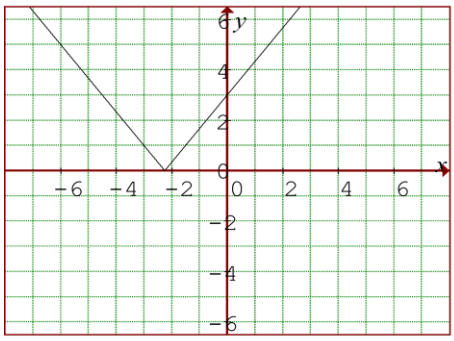
b) $Sum = |-0.875|+|-8.875|+|-2.875|+|5.125|+|2.125|+|3.125|+|-4.875|+|7.125| = 35$

c) $SD = \frac{35}{8} = 4.375$

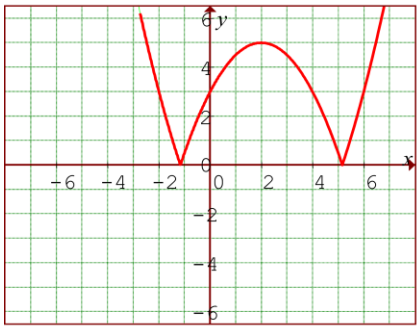
d) The spread of the data.

4. Graph the absolute value of the following equations.

a)

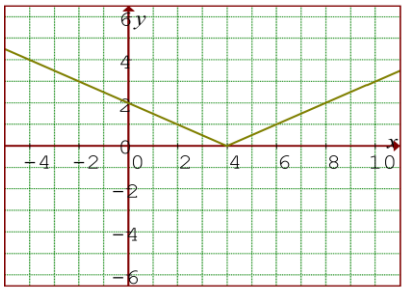


b)



5. Graph the following equations and state the domain and range.

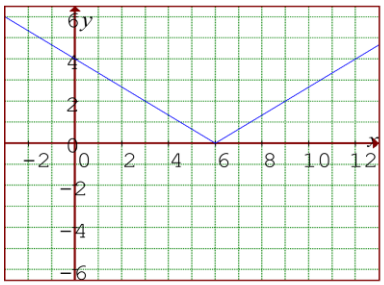
a) $y=|0.5x-2|$



$D: x \in \mathbb{R}$

$R: y \geq 0$

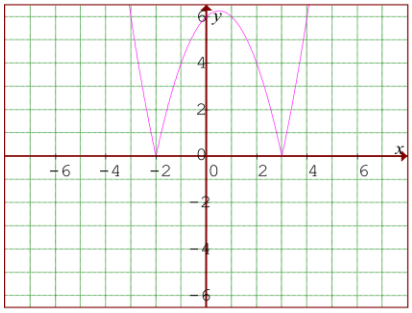
b) $y=\left|\frac{2}{3}x-4\right|$



$D: x \in \mathbb{R}$

$R: y \geq 0$

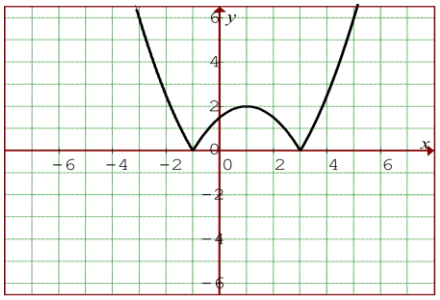
c) $y=|x^2-x-6|$



$D: x \in \mathbb{R}$

$R: y \geq 0$

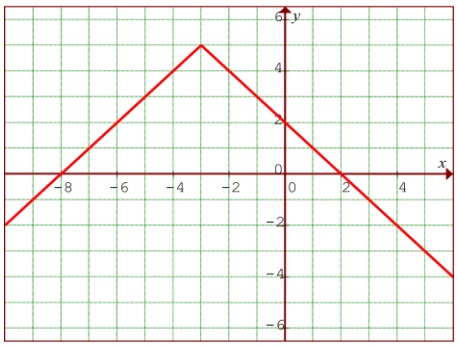
d) $y=|0.5x^2-x-1.5|$



$D: x \in \mathbb{R}$

$R: y \geq 0$

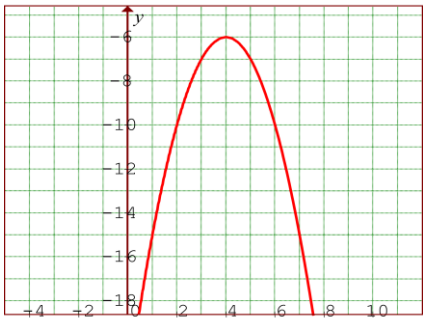
e) $y=-|x+3|+5$



$D: x \in \mathbb{R}$

$R: y \leq 5$

f) $y=-\left|(x-4)^2+6\right|$

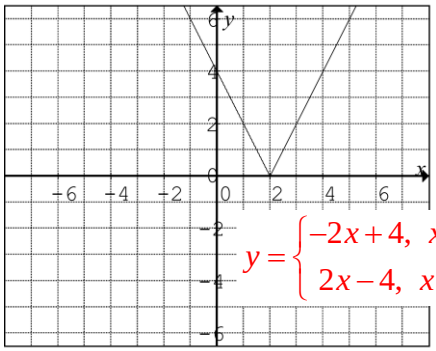


$D: x \in \mathbb{R}$

$R: y \leq -6$

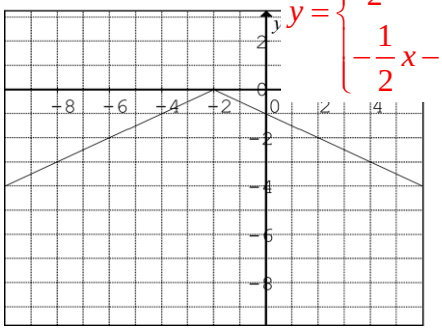
6. Write the piecewise function that represents each absolute value function.

a) $y = |2x - 4|$



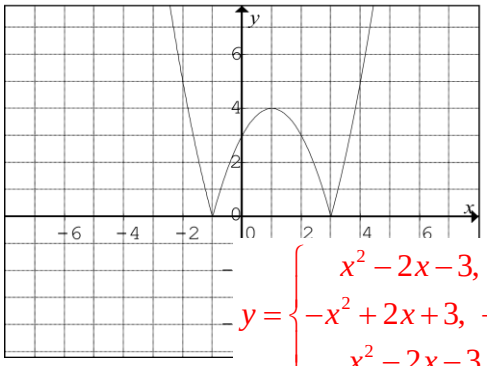
$$y = \begin{cases} -2x + 4, & x < 2 \\ 2x - 4, & x \geq 2 \end{cases}$$

b) $y = -\left|\frac{1}{2}x + 1\right|$



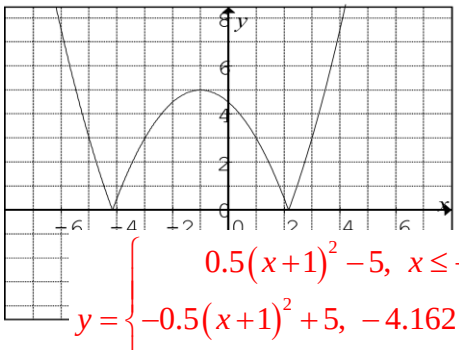
$$y = \begin{cases} \frac{1}{2}x + 1, & x \leq -2 \\ -\frac{1}{2}x - 1, & x > -2 \end{cases}$$

c) $y = |x^2 - 2x - 3|$



$$y = \begin{cases} x^2 - 2x - 3, & x \leq -1 \\ -x^2 + 2x + 3, & -1 < x \leq 3 \\ x^2 - 2x - 3, & x > 3 \end{cases}$$

d) $y = |0.5(x+1)^2 - 5|$



$$y = \begin{cases} 0.5(x+1)^2 - 5, & x \leq -4.162 \\ -0.5(x+1)^2 + 5, & -4.162 < x \leq 2.162 \\ 0.5(x+1)^2 - 5, & x > 2.162 \end{cases}$$

7. Solve for x.

a) $|x - 3| = x - 4$

$x - 3 = x - 4$

$-3 = -4$

No Solution

$-(x - 3) = x - 4$

$-x + 3 = x - 4$

$7 = 2x$

$\frac{7}{2} = x$

b) $|2x - 3| = x + 4$

$2x - 3 = x + 4$

$x = 7$

$-(2x - 3) = x + 4$

$-2x + 3 = x + 4$

$-3x = 1$

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

c) $|x^2+9|=6x$

$x^2+9=6x$

$x^2-6x+9=0$

$(x-3)^2=0$

$x=3$

$-(x^2+9)=6x$

$-x^2-9=6x$

$0=x^2-6x+9$

$(x-3)^2=0$

$x=3$

d) $|2x^2-x-6|=2x+1$

$2x^2-x-6=2x+1$

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

$x=\dfrac{3\pm\sqrt{(-3)^2-4(2)(-7)}}{2(2)}$

$x=\dfrac{3\pm\sqrt{65}}{4}$

$x=\dfrac{3+\sqrt{65}}{4}\approx 2.76556$

$-(2x^2-x-6)=2x+1$

$-2x^2+x+6=2x+1$

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

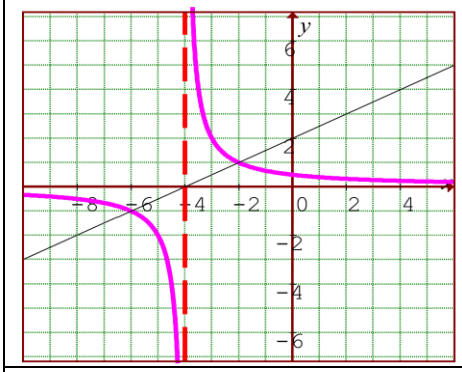
$x=\dfrac{-1\pm\sqrt{1^2-4(2)(-5)}}{2(2)}$

$x=\dfrac{-1\pm\sqrt{41}}{4}$

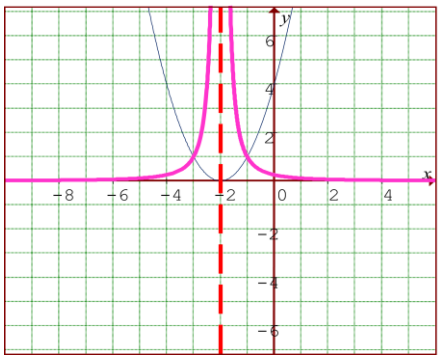
$x=\dfrac{-1+\sqrt{41}}{4}\approx 1.3508$

8. Graph the following functions.

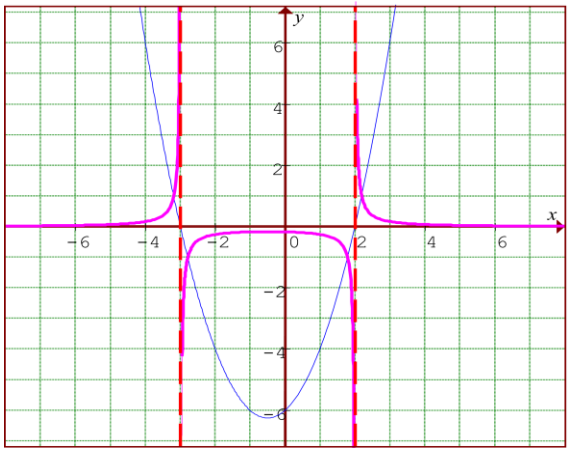
a) $y=\dfrac{1}{0.5x+2}$



b) $y=\dfrac{1}{x^2+4x+4}$



c) $y=\dfrac{1}{(x-2)(x+3)}$



d) $y=\dfrac{1}{f(x)}$