

Unit 1 Test Review

Solve each equation. Check for extraneous solutions.

1) $|3 - 9v| = -87$

NO solution

2) $|-6 + 6n| = 12$

$-6 + 6n = 12$

$6n = 18$

$n = 3$

$|-6 + 6(3)| = 12$

$|12| = 12 \checkmark$

$-6 + 6n = -12$

$6n = -6$

$n = -1$

$|-6 + 6(-1)| = 12$

$|-12| = 12 \checkmark$

3) $|2x + 12| = 4x$

$2x + 12 = 4x$

$12 = 2x$

$6 = x$

$|2(6) + 12| = 4(6)$

$24 = 24 \checkmark$

~~$2x + 12 = -4x$~~

~~$12 = -6x$~~

~~$-2 = x$~~

~~$|2(-2) + 12| = 4(-2)$~~

~~$8 = -8$~~

4) $-2 + |8 - 7r| = 20$

$|8 - 7r| = 22$

$8 - 7r = 22$

$-7r = 14$

$r = -2$

$-2 + |8 - 7(-2)| = 20$

$-2 + |22| = 20$

$20 = 20 \checkmark$

$8 - 7r = -22$

$-7r = -30$

$r = 30/7$

$-2 + |8 - 7(30/7)| = 20$

$-2 + |-22| = 20$

$20 = 20 \checkmark$

5) $|9 - 2x| = 10 + 3x$

~~$9 - 2x = 10 + 3x$~~

~~$9 - 2x = -10 - 3x$~~

~~$5x = -1$~~

~~$x = -1/5$~~

~~$x = -19$~~

~~$|9 - 2(-19)| = 10 + 3(-19)$~~

~~$|9 - 2(-7/5)| = 10 + 3(-7/5)$~~

~~$|9 + 38| = 10 - 57$~~

~~$|9 + 7/5| = 10 - 3/5$~~

~~$47 = -47$~~

$\frac{47}{5} = \frac{47}{5} \checkmark$

~~$\frac{|-x+9|}{9} = (4)9$~~

~~$|-x+9| = 36$~~

~~$-x+9 = 36$~~

~~$-x = 27$~~

~~$x = -27$~~

~~$\frac{|-(-27)+9|}{9} = 4$~~

~~$\frac{36}{9} = 4 \checkmark$~~

~~$-x+9 = -36$~~

~~$-x = -45$~~

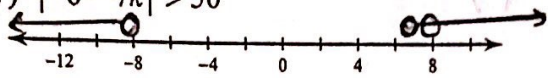
~~$x = 45$~~

~~$\frac{|-45+9|}{9} = 4$~~

~~$\frac{36}{9} = 4 \checkmark$~~

Solve each inequality and graph its solution.

7) $|-6-7k| > 50$



$-6-7k > 50$

$-6-7k < -50$

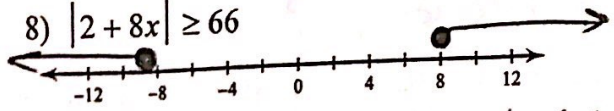
$-7k > 56$

$-7k < -44$

$k < -8$

$k > 44/7$

8) $|2+8x| \geq 66$



$2+8x \geq 66$

$2+8x \leq -66$

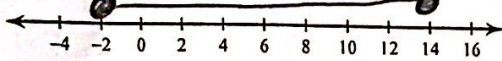
$8x \geq 64$

$8x \leq -68$

$x \geq 8$

$x \leq -17/2$

9) $|6-x|-4 \leq 4$



$6-x \leq 8$

$6-x \geq -8$

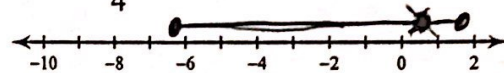
$-x \leq 2$

$-x \geq -14$

$x \geq -2$

$x \leq 14$

10) $\frac{|10+4n|}{4} \leq 4$



$10+4n \leq 16$

$10+4n \geq -16$

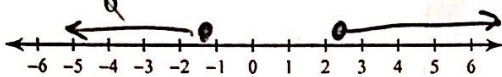
$4n \leq 6$

$4n \geq -26$

$n \leq 3/2$

$n \geq -13/2$

11) $|-4+7x| \geq 2$



$-4+7x \geq 12$

$-4+7x \leq -12$

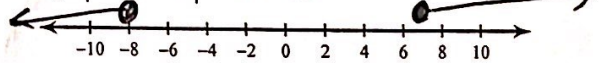
$7x \geq 16$

$7x \leq -8$

$x \geq 16/7$

$x \leq -8/7$

12) $|-6v-3|-3 \geq 42$



$-6v-3 \geq 45$

$-6v-3 \leq -45$

$-6v \geq 48$

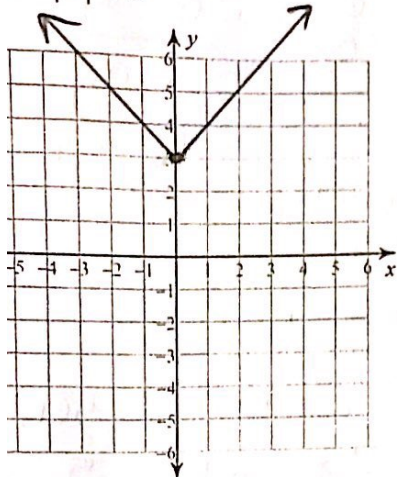
$-6v \leq -42$

$v \leq -8$

$v \geq 7$

For each equation, state the vertex, axis of symmetry, domain, range, and any transformations occurred to the parent function.

$$y = |x| + 3$$

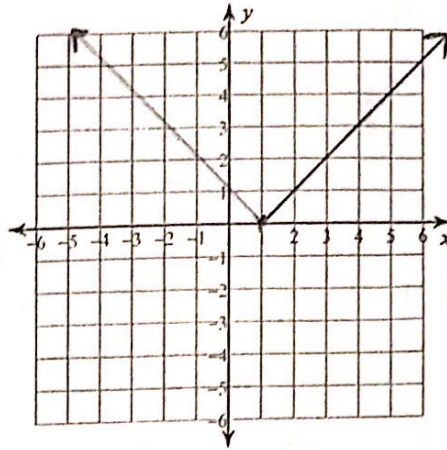


$V: (0, 3)$ AOS: $x = 0$

$R: [-3, \infty)$

translated up 3 units

$$14) y = |x - 1|$$

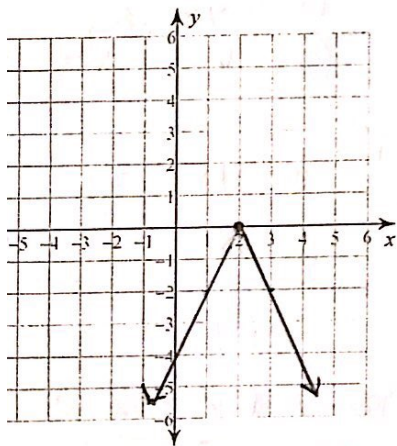


$V: (1, 0)$ AOS: $x = 1$

$D: \mathbb{R}$ $R: [0, \infty)$

translated right 1 unit

$$y = -2|x - 2|$$



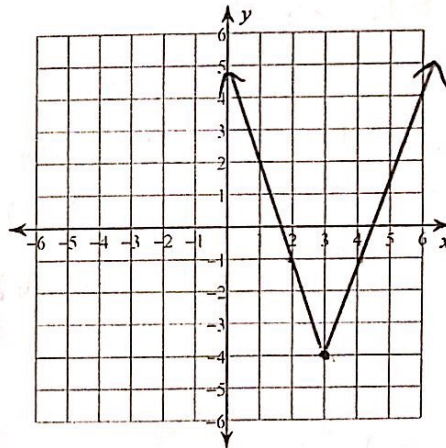
x	y
0	
2	0
3	
4	

$V: (2, 0)$ AOS: $x = 2$

$R: (-\infty, 0]$

stretched, reflected, translated 2 units right

$$16) y = 3|x - 3| - 4$$



$V: (3, -4)$ AOS: $x = 3$

$D: \mathbb{R}$ $R: [-4, \infty)$

stretched, translated right 3 units and down 4 units

Solve each system.

17) $5x - 4y + z = -15$ (1)
 $-2x + 4y - 2z = 2$ (2)
 $4x - 4y - 6z = 26$ (3)

elim y

$$\begin{array}{r} \textcircled{1} 5x - 4y + z = -15 \\ + \textcircled{2} -2x + 4y - 2z = 2 \\ \hline \textcircled{4} 3x - z = -13 \end{array} \quad \begin{array}{r} \textcircled{2} -2x + 4y - 2z = 2 \\ + \textcircled{3} 4x - 4y - 6z = 26 \\ \hline \textcircled{5} 2x - 8z = 28 \end{array}$$

$$\begin{array}{r} \textcircled{4} 3x - z = -13 \\ \uparrow \\ * -8 \textcircled{4} -24x + 8z = 104 \\ + \textcircled{5} 2x - 8z = 28 \\ \hline -22x = 132 \end{array}$$

$x = -6$

$$\begin{array}{r} \textcircled{4} 3(-6) - z = -13 \\ -18 - z = -13 \\ -z = 5 \\ z = -5 \end{array}$$

$$\begin{array}{r} \textcircled{2} -2(-6) + 4y - 2(-5) = 2 \\ 12 + 4y + 10 = 2 \\ 4y + 22 = 2 \\ 4y = -20 \\ y = -5 \end{array}$$

$(-6, -5, -5)$

elim z 18) $-6y + z = 25$ (1) +2
 $3y - 2z = -14$ (2)
 $2x + 2y + 5z = 5$ (3)

$$\begin{array}{r} \textcircled{1} -12y + 2z = 50 \\ + \textcircled{2} 3y - 2z = -14 \\ \hline -9y = 36 \\ y = -4 \end{array}$$

$$\begin{array}{r} \textcircled{1} -6(-4) + z = 25 \\ 24 + z = 25 \\ z = 1 \end{array}$$

$$\begin{array}{r} \textcircled{3} 2x + 2(-4) + 5(1) = 5 \\ 2x - 8 + 5 = 5 \\ 2x - 3 = 5 \\ 2x = 8 \\ x = 4 \end{array}$$

$(4, -4, 1)$

19) $-3x + 5y - z = -13$ (1)
 $(-x + y + 3z = -23) \cdot 2, -5$ (2)
 $-2y + 4z = -20$ (3)

$$\begin{array}{r} \textcircled{2} -2x + 2y + 6z = -46 \\ + \textcircled{3} 0x - 2y + 4z = -20 \\ \hline \textcircled{4} -2x + 10z = -66 \end{array}$$

$$\textcircled{4} -2x + 10z = -66$$

$$\begin{array}{r} \textcircled{4} -2x + 10z = -66 \\ + \textcircled{5} 2x - 10z = 102 \\ \hline -6z = 36 \end{array}$$

$z = -6$

$$\begin{array}{r} \textcircled{4} -2x + 10(-6) = -66 \\ -2x - 60 = -66 \\ -2x = -6 \\ x = 3 \end{array}$$

$$\begin{array}{r} \textcircled{1} -3x + 5y - z = -13 \\ \textcircled{2} 5x - 5y + 15z = 115 \\ \hline \textcircled{3} 2x - 10z = 102 \end{array}$$

$(3, -2, -6)$

$$\begin{array}{r} \textcircled{3} 2y + 14(-6) = -20 \\ -2y - 24 = -20 \\ -2y = 4 \\ y = -2 \end{array}$$

20) $-4x - 3y + 3z = -23$ (1)
 $-6x - y = -16$ (2)
 $3z = 3$ (3)

$z = 1$

$$\begin{array}{r} -4x - 3y - 3 = -23 \\ -4x - 3y = -20 \\ \textcircled{2} (-6x - y = -16) \cdot 3 \end{array}$$

$$\begin{array}{r} \textcircled{1} -4x - 3y = -20 \\ \textcircled{2} 18x + 3y = 48 \\ \hline 14x = 28 \end{array}$$

$x = 2$

$$\begin{array}{r} \textcircled{2} -6(2) - y = -16 \\ -12 - y = -16 \\ -y = -4 \\ y = 4 \end{array}$$

$(2, 4, 1)$