Name:_____ Date:_____

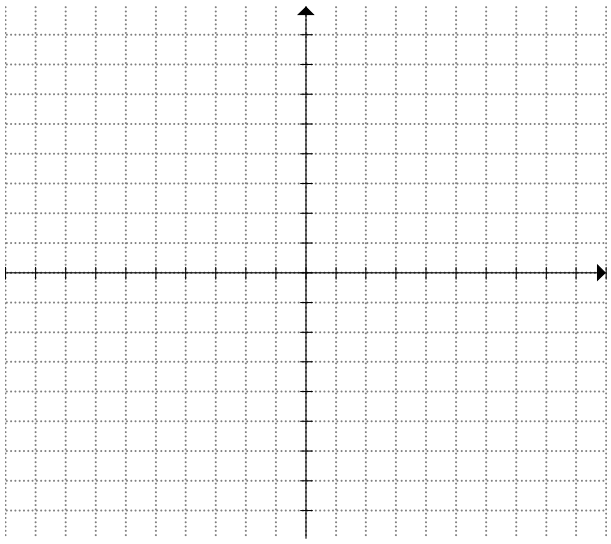
HW Section 1.2 Graphing and Solving Absolute Value Functions:

1. Indicate where the function intersects the "X" intercept for each function below. Show your work:

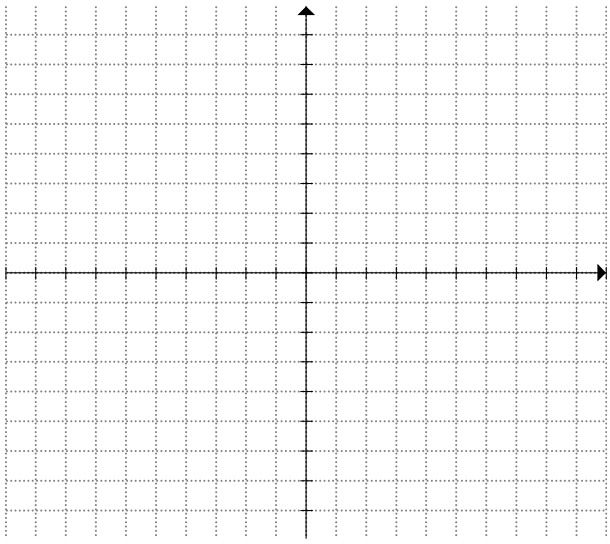
a) $y = |3x - 7|$ b) $y = |18 - 4x|$ c) $y = |12 - 0.5x| + 2$

2. Graph the left side Y1 and right side Y2. Then find the intersection points and indicate your solution:

a) $6 = |3x + 10|$

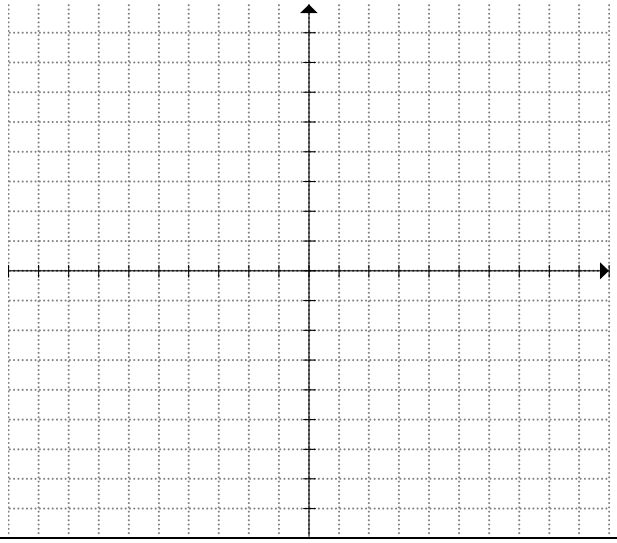


b) $-4 = |8 - 0.5x|$

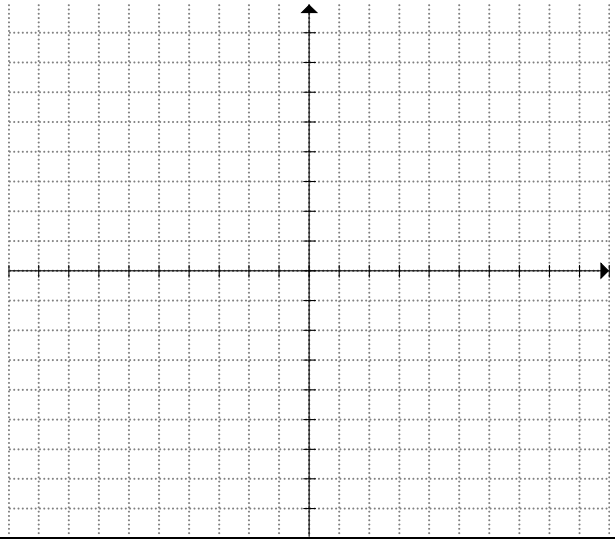


Domain: Range:

c) $2x + 1 = |x - 3|$



d) $-2x + 3 = |x + 2| + 1$



3. Solve the following equations algebraically and indicate any extraneous roots:

| | |
|---|---|
| a) $\left\|-2x\right\| = 20$ | b) $\left\|8x-15\right\| = 7$ |
| c) $\left\|-9x-20\right\|+23 = 0$ | d) $\sqrt{(2x-13)^2} = x+4$ |
| e) $\left\|3x+14\right\| = x+7$ | f) $\left\|2x+1\right\| = 3-x$ |
| g) $\left\|4x+11 = 2x-3\right\|$ | h) $\left\|x^2-3x\right\| = 4$ |

| | |
|---|---|
| i) $\left\|13x - x^2\right\| = 30$ | j) $\left\|2x^2 - x - 6\right\| = 2x + 1$ |
| k) $\left\|4x + 10\right\| = 2x^2 + 1$ | l) $\left\|x^2 - 4\right\| = 2x^2 - 3$ |

4. Given the equation, for what values of "k" will it have an extraneous root? $\left|3x + 11\right| - 11 = k$

5. Solve for "x" : $\left|x + 4\right| = \left|-12\right|$

6. For what values of "k" will the solution have 3 or more solutions? $\left|10x + x^2\right| = k$

7. Solve for all real numbers "x" such that $\left|\left(5-|x|\right)\right| \le 14$

8. How many solutions does the following have? Find all the solutions: $\left|x^2-12\right| = 0.5x+4$

9. The graphs of $|x+y| = k$ and $|x-y| = k$ creates a square. What is the value of "k" if the area of this square is 20?

10. How many integers satisfy the following: $|x|+1 \ge 3 \;\; and \;\; |x-1| < 3$ ?

11. What is the domain and range of the following graph: $\left|x^2-y^2\right| = 3$ and $\left|x^2+y^2\right| = 3$

12. Challenge: The graph of the three equations are given in the coordinate plane. How mnay ordered pairs of integers (x,y) satisfy all three equations? List all the coordinate pairs: CNML 1985 4-4

$y-|y| = 0$ ; $x-3+|x-3| = 0$ and $y-x+|y-x| = 0$