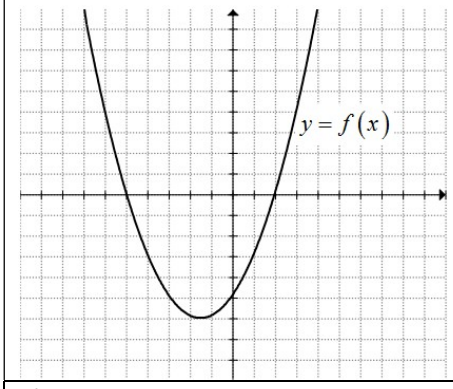
Name:_____ Date:_____

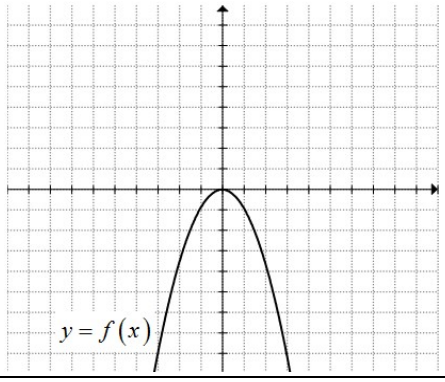
Section 2.5 Absolute Value of Quadratic Functions and Piece Wise Functions

1. Graph $y=\left|f\left(x\right)\right|$ for each function on the same grid:

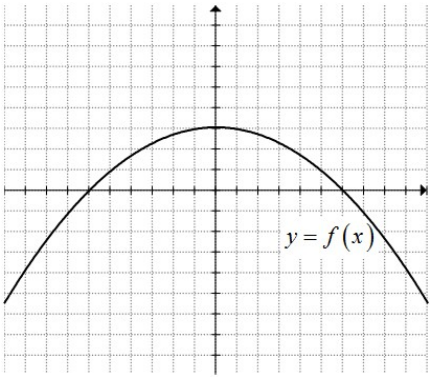
a)



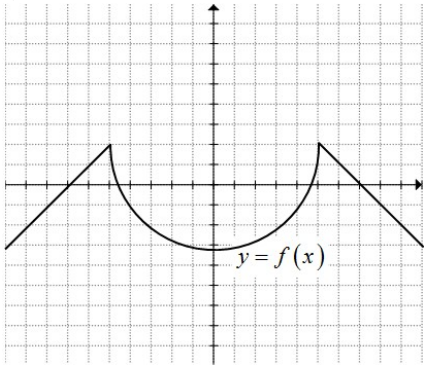
b)



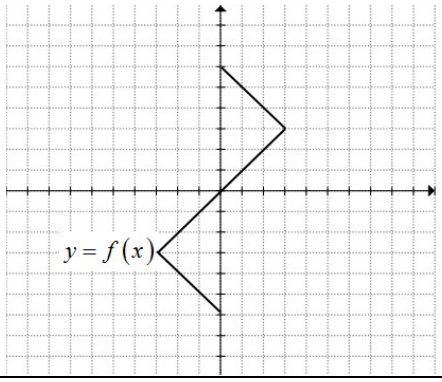
c)



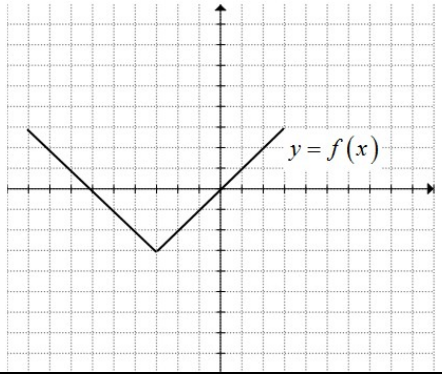
d)



e)

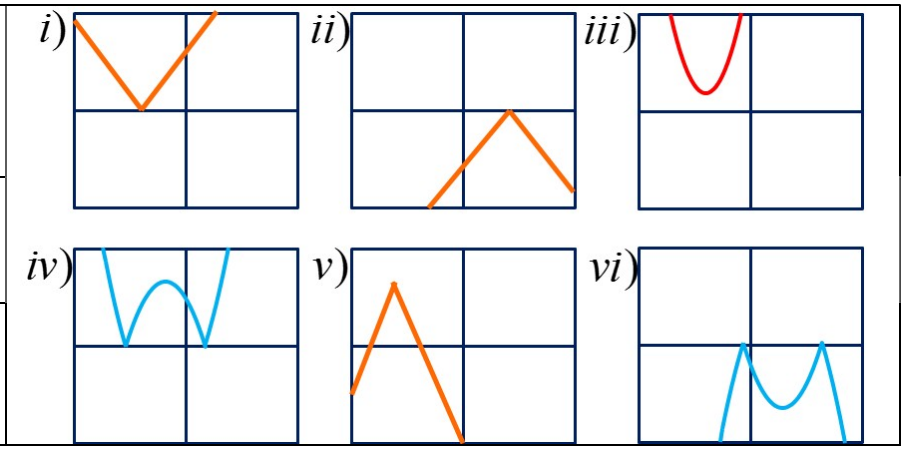


f)



2. Given each equation on the right, indicate which of the graphs on the right is the corresponding one:

a) $y=-\left\|-3x+7\right\|$	b) $y=\left\|\left(x+3\right)^2-4\right\|$	
c) $y=-\left\|\left(x-3\right)^2-5\right\|$	d) $y=\left\|3x+7\right\|$	
e) $y=\left\|\left(x+3\right)^2+1\right\|$	f) $y=-\left\|-5x-8\right\|+4$	



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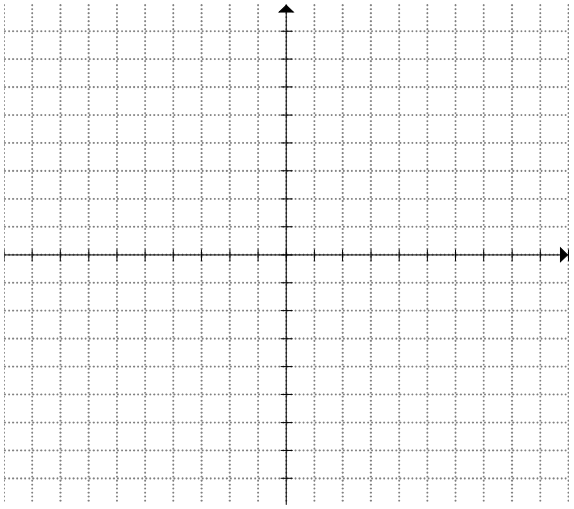
3. Graph each of the following functions on the grid provided. Get the Domain and Range, state the piece wise function:

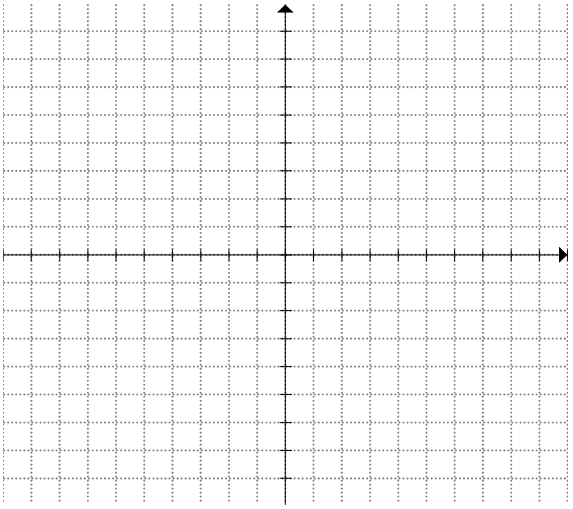
a) $y = |x^2 - 4|$



Domain Range:

Piece Wise Function:

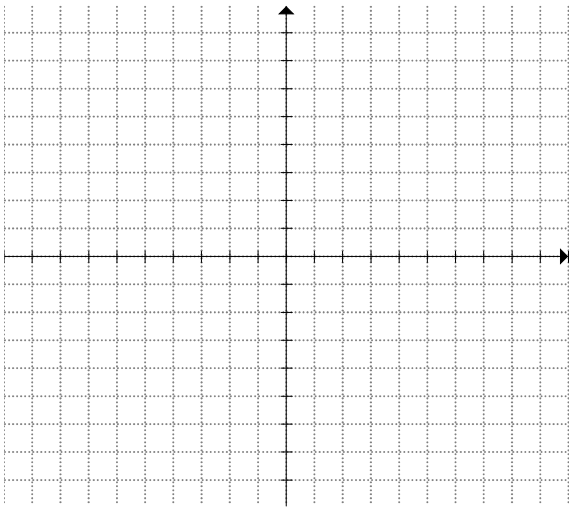
$y = |0.5x^2 + 3|$



Domain Range:

Piece Wise Function:

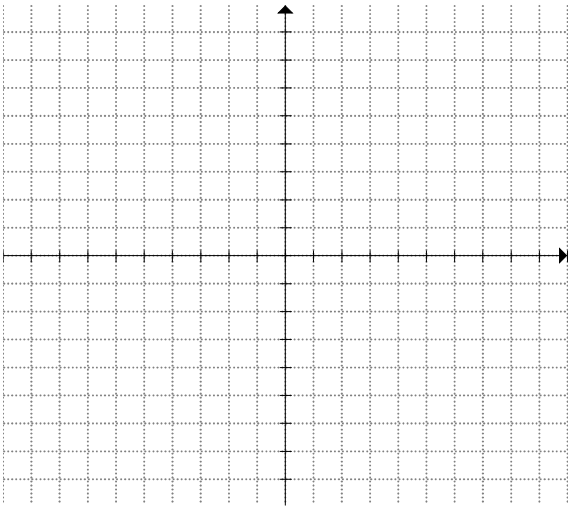
$y = |(x-3)^2 - 4|$



Domain Range:

Piece Wise Function:

$y = -|2x^2 - 3x - 10|$



Domain Range:

Piece Wise Function:

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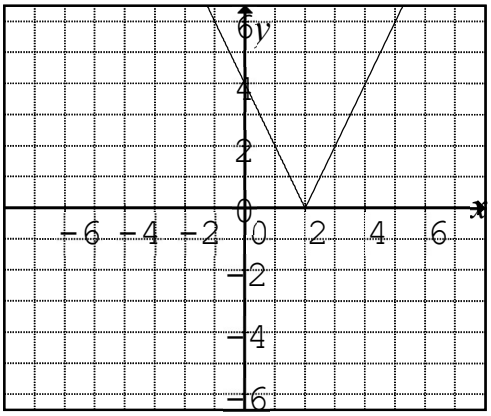
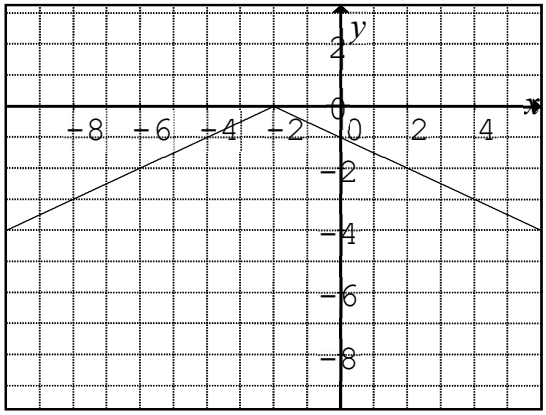
3. Write the piecewise function that represents each absolute value function.

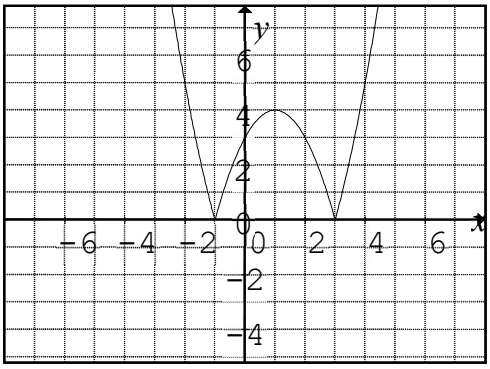
a) $y = |2x - 4|$



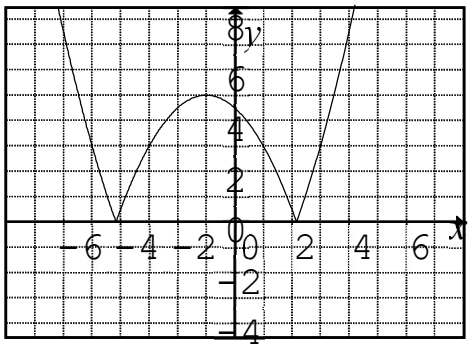
b) $y = -\left|\frac{1}{2}x + 1\right|$



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



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



4. What is the difference between the graphs of $y = |3x + 1|$ and $y = -|3x + 1|$.

5. What is the difference between the graphs of $y = |3x + 1|$ and $y = |3x + 1| + 4$.

6. The following points $(3,5)$, $(-3,-7)$, $(-2,8)$, $(7,-10)$, and $(-3,-9)$ are on the function $y = f(x)$. What will the coordinates be on the function: $y = |f(x)|$?

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7. Solve each of the following:

a) $\lvert x-3\rvert = x-4$	b) $\lvert 2x-3\rvert = x+4$
c) $\lvert x^2+9\rvert = 6x$	d) $\lvert 2x^2-x-6\rvert = 2x+1$
k) $\lvert x^2+9\rvert = 6x$	l) $\lvert 2x^2-x-6\rvert = 2x+1$
m) $12 = \lvert x^2+3\rvert$	n) $\lvert x^2-10x\rvert = 24$

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O) $\left\|13x - x^2\right\| = 30$	P) $\left\|x^2 - 3x\right\| = 4$

8. Find all the value(s) of "x" for which the equation is true: $|x| = |x+1|$

9. If $f(3) = -5$ and $f(-5) = 7$, then what is the value of $|f(-5)| - f^{-1}(-5)$?

10. Find the two value(s) that will satisfy the equation: $|x-1| + |x| + |x+1| = \frac{5}{2}$

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11. Solve for "x" $\left|x^2-9x+20\right|=\left|16-x^2\right|$

12. How many ordered pairs of integers (a,b) satisfy this equation? $\left|a-2\right|\times\left|b-3\right|=2$

13. A parabola with equation $y=ax^2+bx+c$ is reflected about the x-axis. The parabola and its reflection are translated horizontally five units in opposite directions to become graphs of $y=f\left(x\right)$ and $y=g\left(x\right)$ respectively. Which of the following describes the graph of $y=\left(f+g\right)\left(x\right)$? i.e.: $y=f\left(x\right)+g\left(x\right)$

    a) A parabola tangent to the x-axis b) A parabola not tangent to the x-axis

    c) a horizontal line d) A non-horizontal line e) the graph of a cubic function

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