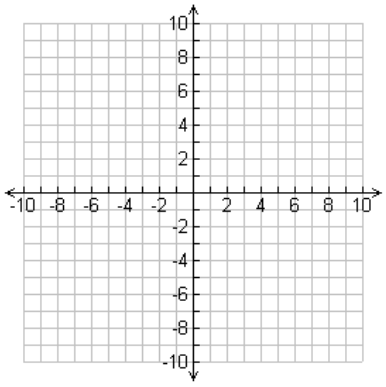
Name: _____

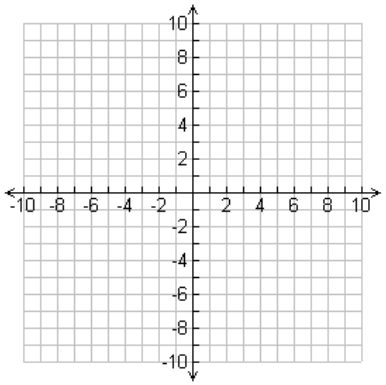
SM2 4.5: Piecewise Functions

Graph the following piecewise functions.

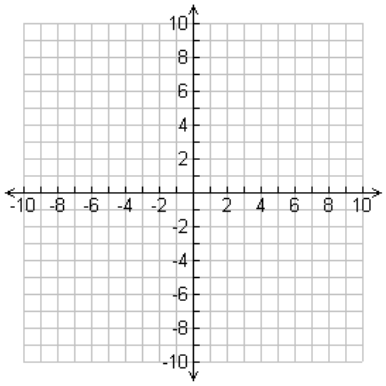
1) $y = \begin{cases} x + 2, if\ x \leq 2 \\ x, if\ x > 2 \end{cases}$



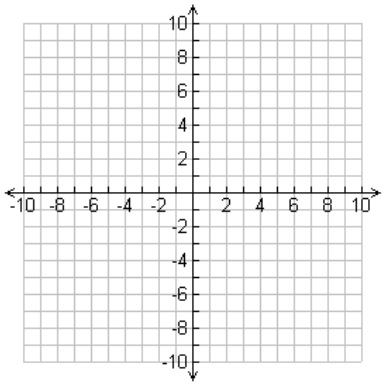
2) $y = \begin{cases} x + 1, if\ x \leq 0 \\ -x, if\ x > 2 \end{cases}$



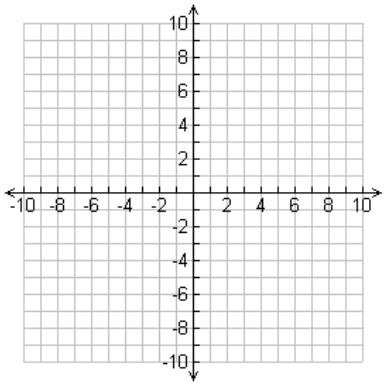
3) $y = \begin{cases} 3x, if\ x < 0 \\ x^2, if\ x \geq 0 \end{cases}$



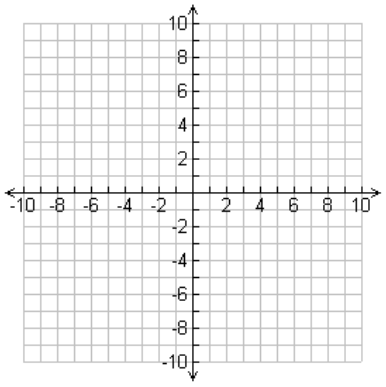
4) $y = \begin{cases} 3x + 4, if\ x \leq 0 \\ |x - 1|, if\ x > 0 \end{cases}$



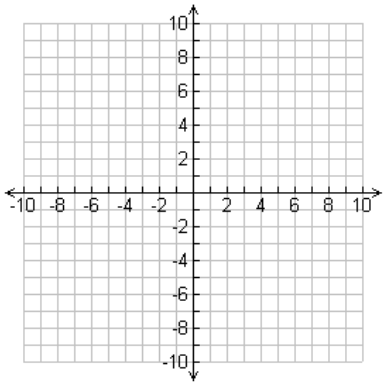
5) $y = \begin{cases} 2, if\ 1 \leq x \leq 4 \\ |x - 5|, if\ x > 4 \end{cases}$



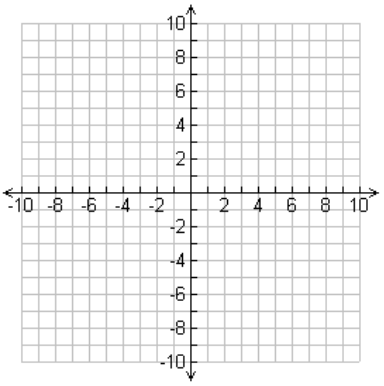
6) $y = \begin{cases} x^2, if\ x < 1 \\ 4x - 3, if\ x \geq 1 \end{cases}$



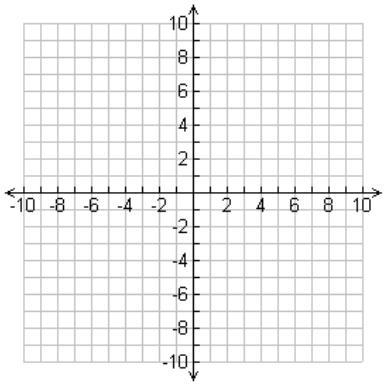
7) $y = \begin{cases} 2(x+2)^2 + 4, if\ x < -2 \\ |x+2| - 3, if\ x \geq -2 \end{cases}$



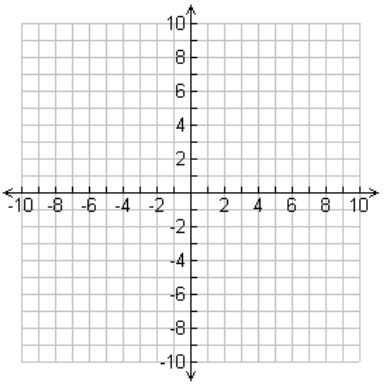
8) $y = \begin{cases} |x+2|, if\ x \leq 0 \\ -3x + 2, if\ x > 0 \end{cases}$



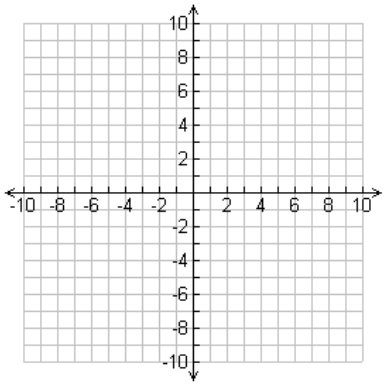
9) $y = \begin{cases} -x^2 + 1, if\ -1 \leq x < 1 \\ 10, if\ x \geq 1 \end{cases}$



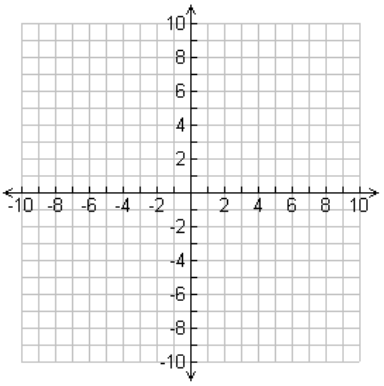
10) $y = \begin{cases} \frac{1}{2}x^2 - 4, if\ x \leq 2 \\ 2|x-2| + 1, if\ x > 2 \end{cases}$



11) $y = \begin{cases} -|x|, if\ x < 0 \\ x - 1, if\ x \geq 1 \end{cases}$

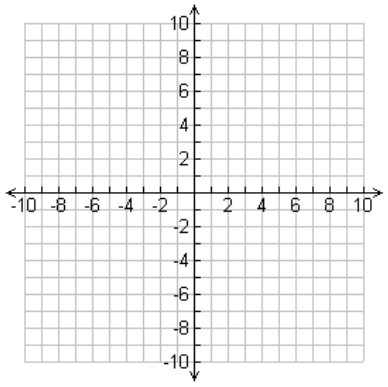


12) $y = \begin{cases} 2x, if\ x < -4 \\ -|x+3|, if\ -4 \leq x \leq 1 \\ x^2 - 4, if\ x > 1 \end{cases}$



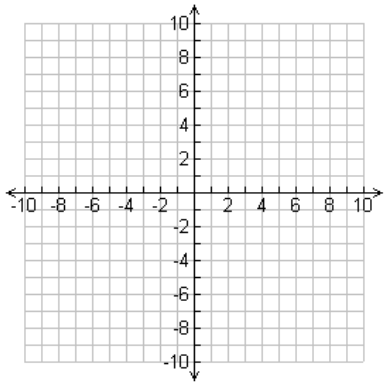
Graph the following piecewise functions and identify the given properties.

13) $y = \begin{cases} -3x + 1, if\ x < 2 \\ 4x - 6, if\ x \geq 2 \end{cases}$



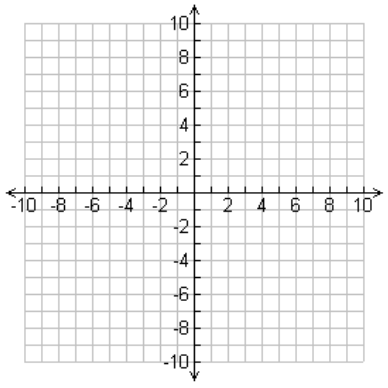
Domain: _____
Range: _____
Max/Min: _____
x-intercept(s): _____
y-intercept: _____
Increasing: _____
Decreasing: _____
Positive: _____
Negative: _____

14) $y = \begin{cases} 3x, if\ x < -1 \\ x^2, if\ x \geq -1 \end{cases}$



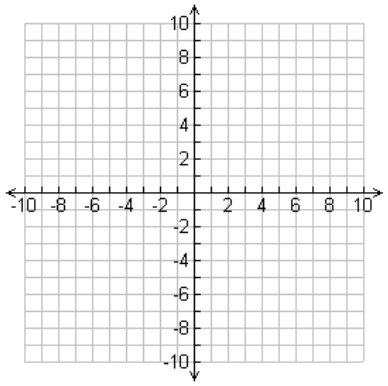
Domain: _____
Range: _____
Max/Min: _____
x-intercept(s): _____
y-intercept: _____
Increasing: _____
Decreasing: _____
Positive: _____
Negative: _____

15) $y = \begin{cases} -x, if\ x \leq 1 \\ |x + 2|, if\ x > 2 \end{cases}$



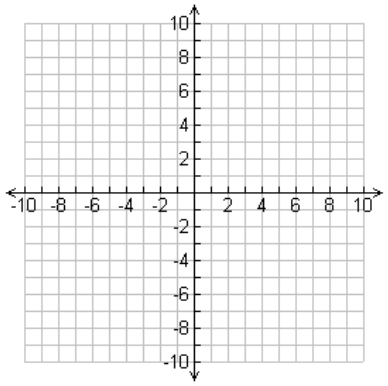
Domain: _____
Range: _____
Max/Min: _____
x-intercept(s): _____
y-intercept: _____
Increasing: _____
Decreasing: _____
Positive: _____
Negative: _____

16) $$y = \begin{cases} -x + 5, if\ x \leq -3 \\ \frac{1}{2}x + 1, if\ x \geq 2 \end{cases}$$



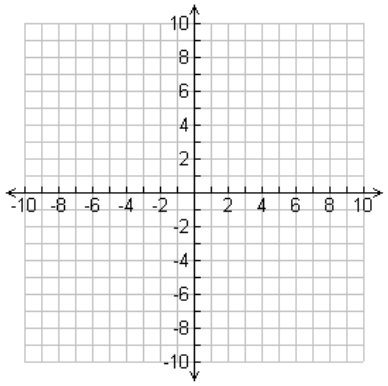
Domain: _____
Range: _____
Max/Min: _____
x-intercept(s): _____
y-intercept: _____
Increasing: _____
Decreasing: _____
Positive: _____
Negative: _____

17) $$y = \begin{cases} (x-2)^2 + 3, if\ x \leq 3 \\ |x-4| + 3, if\ x > 3 \end{cases}$$



Domain: _____
Range: _____
Max/Min: _____
x-intercept(s): _____
y-intercept: _____
Increasing: _____
Decreasing: _____
Positive: _____
Negative: _____

18) $$y = \begin{cases} 2|x-2| + 3\ , if\ x < 3 \\ -|x-5| - 1, if 3 \leq x < 7 \end{cases}$$

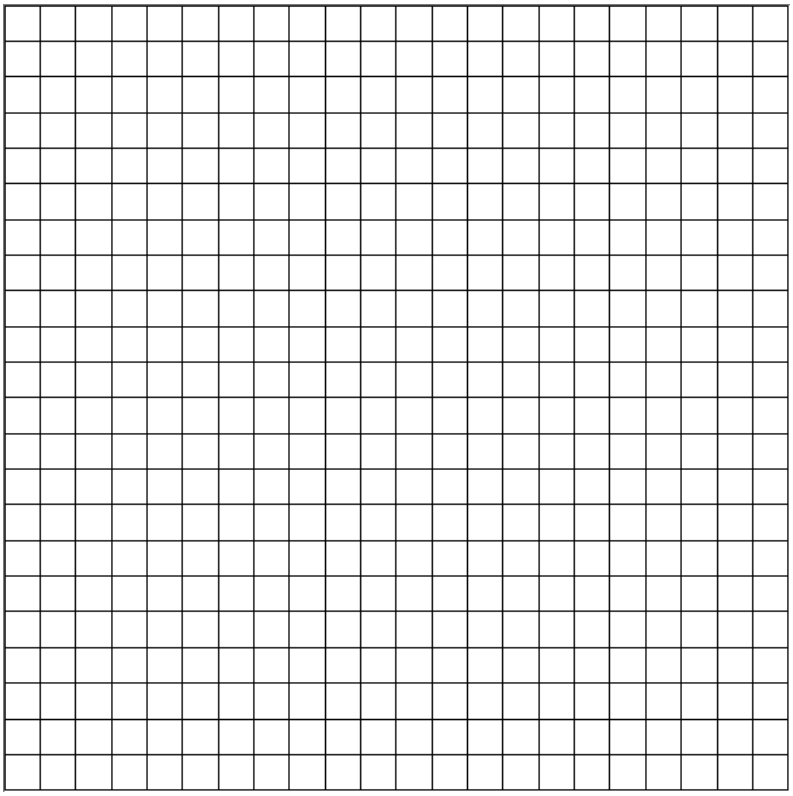


Domain: _____
Range: _____
Max/Min: _____
x-intercept(s): _____
y-intercept: _____
Increasing: _____
Decreasing: _____
Positive: _____
Negative: _____

19) Andrew is walking to school. He looks at his watch and realizes he is running late. He starts jogging. Andrew's distance to school, in miles, d, at any time in minutes, t, can be represented using the function

$$d = \begin{cases} -.1t + 1.5, if\ 0 \leq t < 8 \\ -.2t + 2.3, if\ t \geq 8 \end{cases}$$

a) Create a graph to show Andrew's distance from school at any time t.



b) How long does it take Andrew to reach school? How can you tell from the graph?