Secondary Math 2 Honors

Name_____

5.4 Piecewise Functions

Date_____ Period____

Evaluate the following functions.

1) $f(x)=\begin{cases}(x+1)^2, & x<2\\ x^2+3, & x\ge 2\end{cases}$

a) $f(-3)$

b) $f(7)$

c) $f(2)$

2) $g(x)=\begin{cases}-x^2+1, & x<-4\\ 2|x|-4, & -4\le x<5\\ x-7, & x\ge 5\end{cases}$

a) $g(3)$

b) $g(-12)$

c) $g(5)$

3) $h(x)=\begin{cases}3x+2, & x\le -1\\ x-2, & -1<x\le 4\\ 2x-5, & x>4\end{cases}$

a) $h(-4)$

b) $h(-1)$

c) $h(4)$

d) $h(10)$

4) $k(x)=\begin{cases}3x^2+2, & -9\le x<-1\\ x-5, & -1<x\le 4\\ |x|, & x>4\end{cases}$

a) $k(-4)$

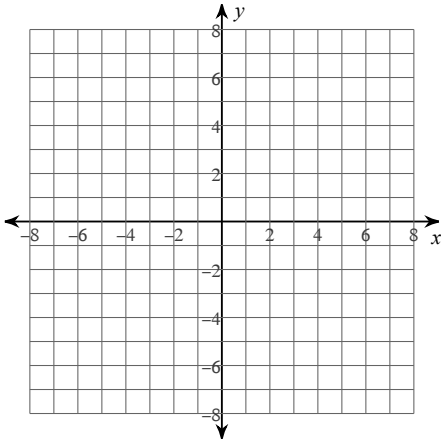
b) $k(-1)$

c) $k(4)$

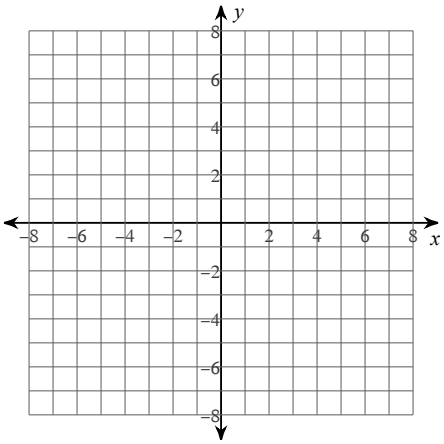
d) $k(7)$

Sketch the graph of each function.

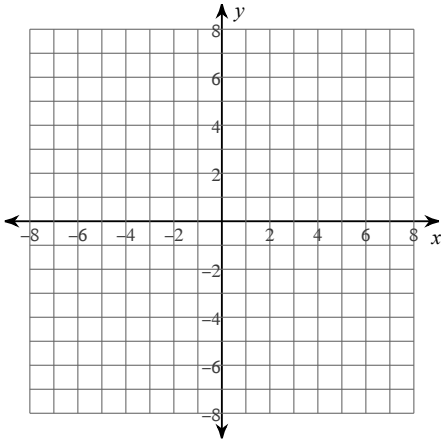
5) $f(x)=\begin{cases}-2, & x\le -4\\ (x+4)^2, & x>-4\end{cases}$



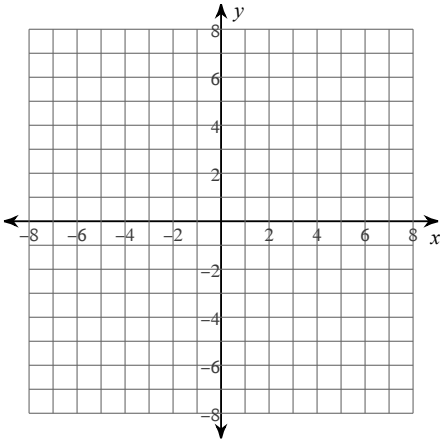
6) $f(x)=\begin{cases}-x-2, & x\le -3\\ 4-x^2, & -3<x\le 3\\ -x+2, & x>3\end{cases}$



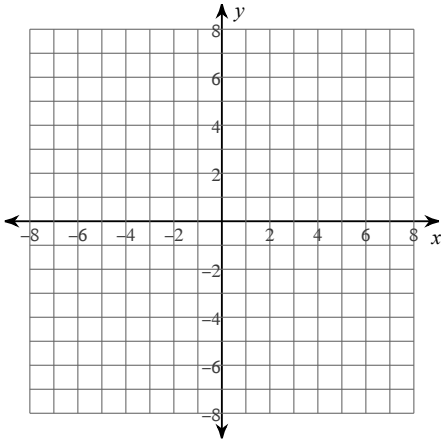
7) $f(x) = \begin{cases} x+1, & x<0 \\ -x+3, & x=0 \\ (x-3)^2, & x>2 \end{cases}$



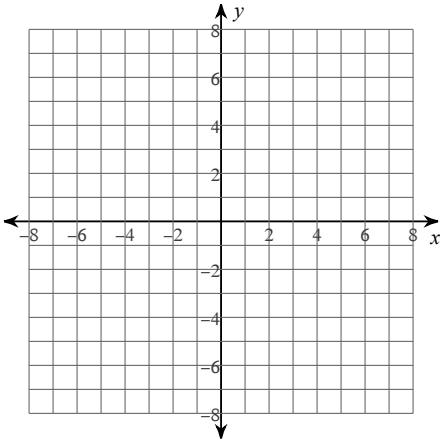
8) $f(x) = \begin{cases} 0, & x \le 0 \\ (x-2)^2, & 0 < x \le 4 \\ x-1, & x>4 \end{cases}$



9) $g(x) = \begin{cases} 3, & x \le 0 \\ 2x+3, & x=1 \\ |x-4|, & x>1 \end{cases}$

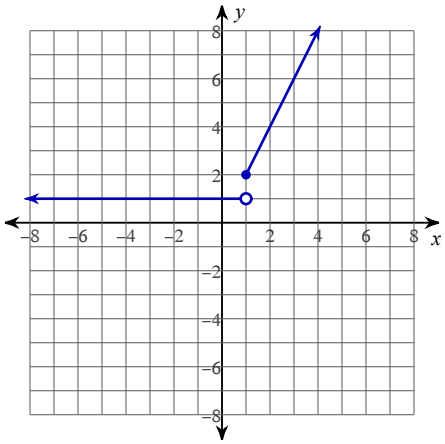


10) $h(x) = \begin{cases} (x+2)^2, & x<-1 \\ |x-3|, & -1 \le x < 4 \\ -|x|, & x \ge 4 \end{cases}$



Write an equation for each piecewise function.

11)



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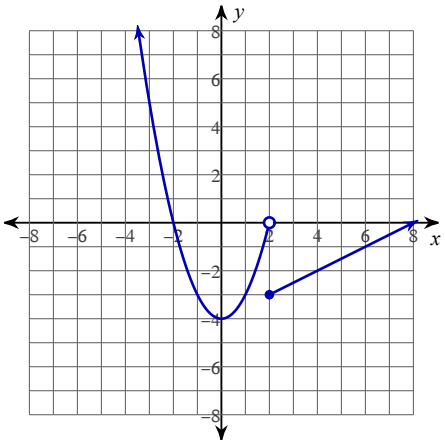

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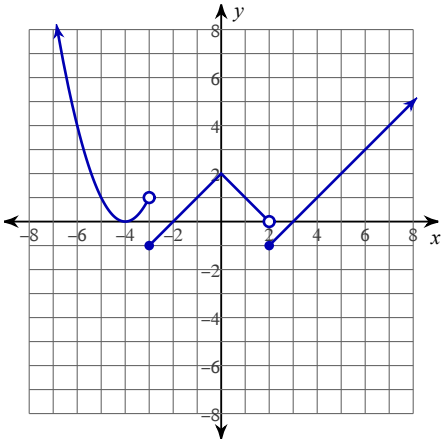

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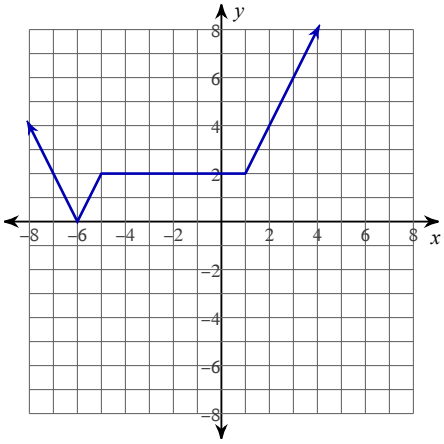


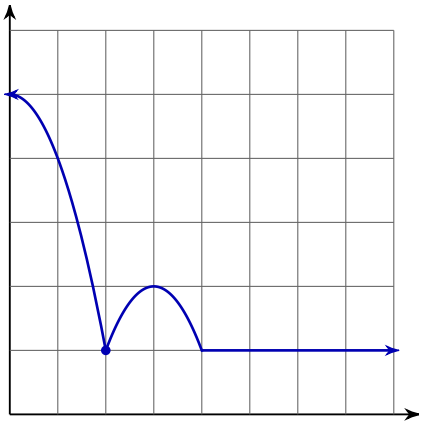
Sketch a graph that could model each situation.

15) Steven is driving to the store. He stops at a light half way there. He arrives and finds the store is closed so he goes home.

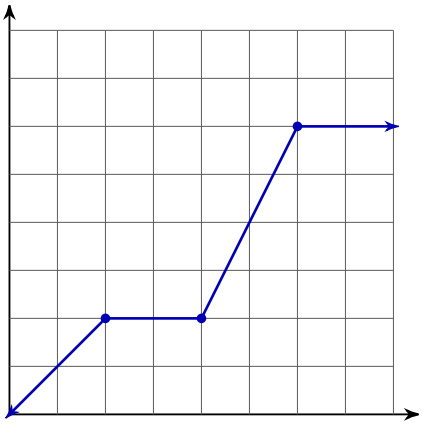
16) Every time Samantha trains for a 5k race she starts with a 5 min sprint, then jogs for 20 min, and then walks for 5 min.

Write a situation that could be modeled by the graph.

17)



18)

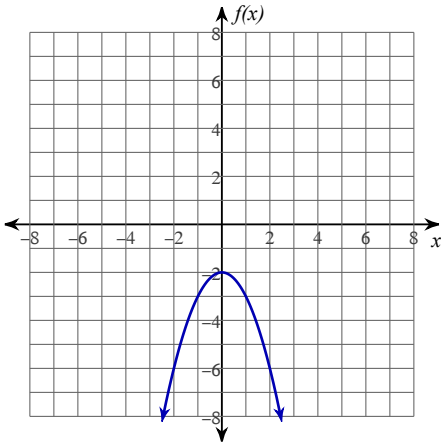


For each problem, find the average rate of change of the function over the given interval.

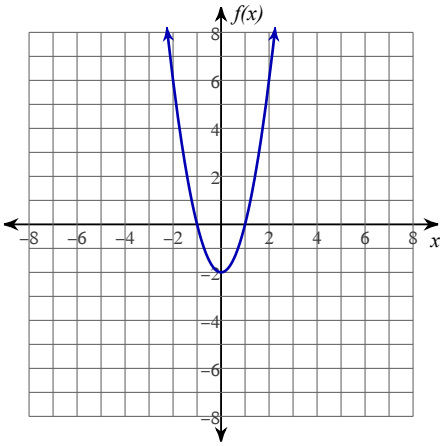
19) $f(x) = x^2 + 1;\quad [-2, 0]$

20) $f(x) = -x^2 + 2;\quad [-3, -\frac{5}{2}]$

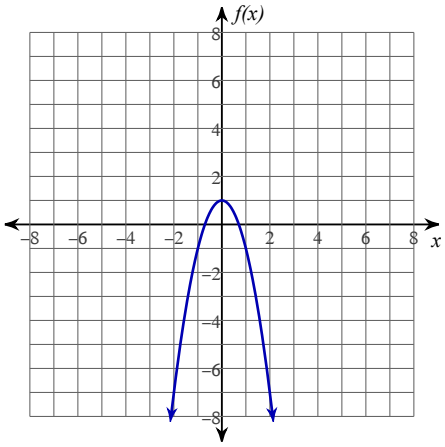
21) $f(x) = -x^2 - 2;\quad [-2, 1]$



22) $f(x) = 2x^2 - 2;\quad [0, 1]$



23) $f(x) = -2x^2 + 1;\quad [-2, 0]$



24) $f(x) = x^2 + 2x - 2;\quad [-3, -1]$