Section 3.5: Piecewise-defined functions

#1-6: Find the indicated value for each function.

1) $f(x) = \begin{cases} 3x, \ if \ x < 0 \\ 2x + 1, \ if \ x \geq 0 \end{cases}$

a) f(-5) b) f(0) c) f(2)

2) $f(x) = \begin{cases} x - 5, \ if \ x \leq 5 \\ 2x - 4, \ if \ x > 5 \end{cases}$

a) f(0) b) f(5) c) f(6)

3) $g(x) = \begin{cases} x - 5, if \ x < -1 \\ x, \ if -1 \leq x \leq 2 \\ x + 2, if \ x > 2 \end{cases}$

a) g(-1) b) g(2) c) g(0)

4) g(x) = $\begin{cases} 2x, if \ x \leq 0 \\ x, if \ 0 < x \leq 3 \\ -5x \ if \ x > 3 \end{cases}$

a) g(0) b) g(3) c) g(-2)

5) $k(x) = \begin{cases} x^2 - 10, if \ x < -10 \\ x^2, if -10 \leq x \leq 10 \\ x^2 + 10. if \ x > 10 \end{cases}$

a) k(-10) b) k(11) c) k(0)

6) $k(x) = \begin{cases} 2x^2 - 3, if \ x < 2 \\ x^2, if \ 2 \leq x \leq 4 \\ 5x - 7 \ if \ x > 4 \end{cases}$

a) k(2) b) k(4) c) k(5)

#7-12: sketch a graph of each function.

7) $f(x) = \begin{cases} 3x, \ if \ x < 0 \\ 2x + 1, \ if \ x \geq 0 \end{cases}$

8) $f(x) = \begin{cases} x - 5, \ if \ x \ \leq 5 \\ 2x - 4, \ if \ x > 5 \end{cases}$

9) $g(x) = \begin{cases} x - 5, if \ x < \ -1 \\ x, \ if \ -1 \ \leq x \leq 2 \\ x + 2, if \ x > 2 \end{cases}$

10) g(x) = $\begin{cases} 2x, if \ x \leq 0 \\ x + 1, if \ 0 < x \leq 3 \\ -5x \ if \ x > 3 \end{cases}$

11) $k(x) = \begin{cases} x^2 - 2, if \ x < \ -1 \\ x^2, if \ -1 \ \leq x \leq 1 \\ x^2 + 2. if \ x > 1 \end{cases}$

12) $k(x) = \begin{cases} 2x^2 - 3, if \ x < 2 \\ x^2, if \ 2 \leq x \leq 4 \\ 5x - 7 \ if \ x > 4 \end{cases}$