Functions, chapter 3.1-3.3

1. Determine the domain and range of the following. Also, use the vertical line test to determine whether the relation defines y as a function of x.
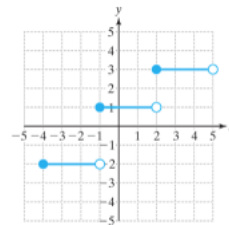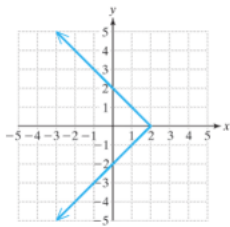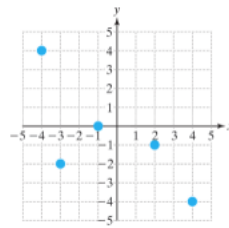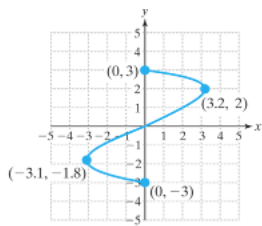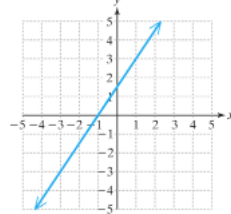
2. Given the graph below of $y = f(x)$, find the following.

a. $f(0)$ $f(3)$ $f(-2)$
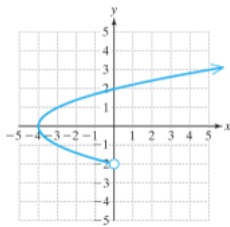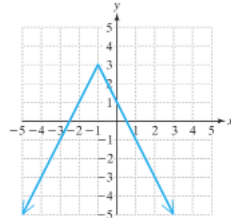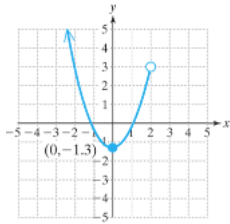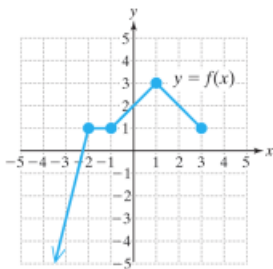
b.   For what value of x is $f(x) = 3$?   For what values of x is $f(x) = 1$?

3. Let $g(x) = x^2 - 4x + 1$ amd $h(x) = |x - 2|$. Find the following:

$g(0)$ $\qquad\qquad\qquad\qquad\qquad$ $h(0)$ $\qquad\qquad\qquad\qquad\qquad$ $g(2)$

$g(2x)$ $\qquad\qquad\qquad\qquad\qquad\qquad$ $h(x + 1)$

4. Find the domain of the following.

$k(x) = \dfrac{x - 3}{x + 6}$ $\qquad\qquad\qquad\qquad\qquad$ $f(x) = \sqrt{x - 3}$

5. Create a chart of points for the function $f(x) = x^2$, using the x-values: $0, 1, 2, 3, -1, -2, -3$, and use the chart to sketch the graph.

6. Create a chart of points for the function $g(x) = \frac{1}{x}$, using the x-values: $1, 2, \frac{1}{3}, -1, -2, -\frac{1}{3}$, and use the chart to sketch the graph.