1.
Section 3.1 #42
Suppose that the quantity supplied S and quantity demanded D of hot dogs at a baseball game are given by the following functions:
$$S(p) = -2000 + 3000p$$
$$D(p) = 10,000 - 1000p$$
Where p is the price of the hot dog.
(a) Find the equilibrium price for the hot dogs at the baseball game. What is the equilibrium quantity?
(b) Determine the prices for which quantity demanded is less than quantity supplied.
(c) What do you think will eventually happen to the price of the hot dogs if the quantity demanded is less than the quantity supplied?

2.
Section 3.1 #48
Suppose that a company has just purchased a new machine for its manufacturing facility for $120,000. The company chooses to depreciate the machine using the straight-line method over 10 years.
(a) Write a linear function that expresses the book value V of the machine as a function of its age, x.
(b) Graph the linear function.
(c) What is the book value after 4 years?
(d) (modified) When is the book value of the machine $36,000?

3.
Section 3.1 #52
A phone company offers a domestic long distance package by charging $5 plus $0.05 per minute.
(a) Write a linear function that relates the cost C, in dollars, of talking x minutes
(b) What is the cost of talking 105 minutes? 180 minutes?

4.
Section 3.3 #33
Graph the function by starting with $y = x^2$ and use transformations. Find all intercepts and axis of symmetry and determine domain and range. State where the function is increasing and decreasing Write in $y = a(x - h)^2 + k$ if necessary:
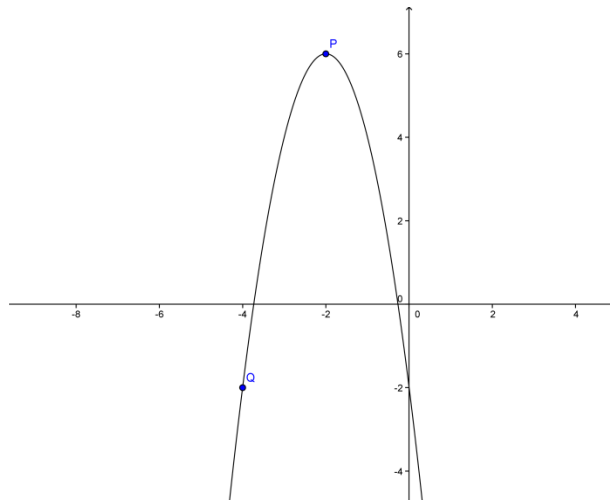$$f(x) = \frac{1}{2}x^2 + x - 1$$

5.
Section 3.3 #42
Graph the function by starting with $y = x^2$ and use transformations. Find all intercepts and axis of symmetry and determine domain and range. State where the function is increasing and decreasing Write in $y = a(x - h)^2 + k$ if necessary:
$$f(x) = x^2 - 2x - 3$$

6. Section 3.3 #58

If $P = (-2,6), Q = (-4,-2)$ determine the equation of the graph, locate all intercepts, axis of symmetry, and where the function is increasing and decreasing.

7.

Section 3.1 #39

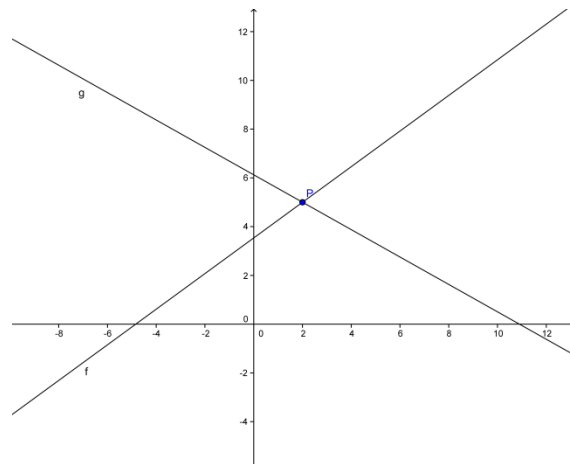The average monthly benefit B, in dollars, for individuals on disability is given by the function

$$B(t) = 19.25t + 585.72$$

Where t is the number of years since January, 1, 1990.

(a) What was the average monthly benefit in 2000? (t=10)

(b) In what year will the average monthly benefit be $893.72?

(c) In what year will the average monthly benefit exceed $1,000?

8.

Section 3.1 #34

If $P = (2,5)$,

(a) Solve the equation: $f(x) = g(x)$

(b) Solve the inequality: $f(x) \leq g(x)$

9.

Section 3.3 #68

The graph of the function $f(x) = ax^2 + bx + c$ has vertex at $(1,4)$ and passes through $(-1,-8)$. Find a, b, and c.