1. Let $f(x) = x^2 - 3x$.
   (a) Find $f(0)$.
   (b) Find $f(1)$.
   (c) Find $f(a)$.
   (d) Find $f(b)$.
   (e) Find $f(a + 2b)$.

2. The income tax in Mathland is determined by the following function:

   $$ T(x) \leq \begin{cases} 
   0.25x & \text{if } 0 \leq x \leq 16000 \\
   4000 + 0.5(x - 16000) & \text{if } 16000 \leq x \leq 50000 \\
   21000 + 0.75(x - 50000) & \text{if } x > 50000.
   \end{cases}$$

   (a) How much taxes would a person that made 40000 in Mathland have to pay?
   (b) How much money did a person that paid 120000 in taxes make?

3. Suppose that the demand and price for a certain brand of shampoo are related by

   $$ p = 16 - \frac{5}{4}q, $$

   where $p$ is price in dollars and $q$ is demand.

   (a) What is the price if the demand is 4 units?
   (b) What is the demand for the shampoo at a price of $16.

   Suppose the price and supply of the shampoo are related by

   $$ p = \frac{3}{4}q,$$

   where $q$ represents the supply and $p$ the price.

   (c) Find the supply when the price is $10$.
   (d) Find the equilibrium quantity.
   (e) Find the equilibrium price.

4. Find the equation of the parabola that has a vertex at $(-1, -2)$ and passes through the point $(1, 2)$.

5. Suppose you are the manager of a firm. The accounting department has determined that the cost estimate for a new product is $C(x) = 65x + 7000$. The sales department expects a revenue of $R(x) = 300x - x^2$. You know that you can only product at most 150 units. How many units must the firm sell to break even?

6. Graph the function $f(x) = x^2(x - 1)(x + 1)$. 