1. Let \( f(x) = 4 + 3x - x^2 \). Find \( f(2) \), \( f(a) \), \( f(a + 1) \), \( f(a^2) \), and \( \frac{f(a + h) - f(a)}{h} \).

2. Complete the square of the following
   (a) \( x^2 + 6x + 4 \)
   (b) \( 2x^2 - 4x + 1 \)

3. Find the domain of the following functions
   (a) \( f(t) = \sqrt{2t - 1} \)
   (b) \( g(x) = \frac{2x^3 - 5}{x^2 + x - 6} \)
   (c) \( h(x) = \sqrt{3 - x} - \sqrt{2 + x} \)
   (d) \( k(x) = \sqrt{5 - \sqrt{2x - 1}} \)

4. Find the domain and sketch a graph of
   \[
   \left\{ \begin{array}{ll}
   x + 2 & : x \leq -1 \\
   x^2 & : x > -1 
   \end{array} \right. 
   \]

5. Determine whether the following functions are even, odd, or neither
   (a) \( f(x) = \frac{x}{x+1} \)
   (b) \( g(x) = \frac{x^2}{x^4+1} \)
   (c) \( h(x) = x^3 - 3 \)

6. Given an acute angle for which \( \sec \theta = 8 \), find the following
   (a) \( \sin \theta \)
   (b) \( \cos \theta \)
   (c) \( \cos(\pi + \theta) \)

7. Suppose that \( f(x) \) is an odd function. If \( g(x) = x^4 \sin(f(x)) \), then is \( g(x) \) an even function, an odd function, or neither? Justify

8. A thin piece of copper wire 20 inches in length is to be cut into two parts. From one part, a square will be made; from the other, a circle. Let \( x = \) the length of the side of the square. What is the sum of the areas of the two figures in terms of \( x \)?