1. Evaluate \( \frac{f(a + h) - f(a)}{h} \), \( h \neq 0 \), for function \( f(x) = 3x^2 - 2x - 1 \).

2. Evaluate \( \frac{f(a + h) - f(a)}{h} \), \( h \neq 0 \), for function \( f(x) = \sqrt{2x - 3} \).
3. Find the domain of \( f(x) = \frac{\sqrt{x - 5}}{x - 1} \).

4. Find the domain of \( f(x) = \frac{\sqrt{x^2 - 9}}{x + 3} \).
5. If $x$ is the side of an equilateral triangle, write the area as a function of $x$.

6. Find the quadratic function which has a maximum value of 5 at $x = 2$, and for which $f(3) = -8$. 
7. Graph the following function and state the domain and range of the function and \( x \)-and \( y \)-intercepts.

(a) \( f(x) = (x - 4)^2 - 1 \)

(b) \( g(x) = \sqrt{x + 4} + 2 \)
8. Graph the given piecewise functions and state the domain, range, and interval of increasing, decreasing, constant.

(a) \( f(x) = \begin{cases} 
  x^2 & \text{if } x \leq 1 \\
  2x + 1 & \text{if } x > 1 
\end{cases} \)

(b) \( h(x) = \begin{cases} 
  3 & -2 \leq x < 5 \\
  -x + 5 & 5 \leq x \leq 8 
\end{cases} \)
9. Determine whether each of the following is symmetric about the $x$-axis, $y$-axis or origin.

(a) $f(x) = -x^2$

(b) $g(x) = -\sqrt{x}$
10. Sketch the graph.
   
   (a) \( f(x) = (x - 2)^2 + 3 \)

   (b) \( g(x) = 2|x + 2| - 1 \)

   (c) \( h(x) = \frac{1}{x + 2} - 1 \)
11. Determine algebraically whether each of the following functions is even, odd or neither.

(a) \( f(x) = \frac{5x}{x^2 + 1} \)

(b) \( g(x) = -|x| + 2 \)

(c) \( h(x) = x^3 - 5x - 1 \)
12. Find extreme value and the value of $x$ where it occurs.

(a) $f(x) = x^2 - 3$

(b) $f(x) = 2(x - 1)^2 + 3$
(c) \( f(x) = 2x^2 + 8x + 5 \)

(d) \( f(x) = -3x^2 - 9x + 2 \)
13. A baseball is thrown upward at a velocity of $56 \text{ ft/ sec}$. If it is released at a point $6 \text{ ft}$ from the ground, its distance $s$ from the ground at $t$ seconds is given by $s(t) = -16t^2 + 56t + 6$. When will the baseball reach its maximum height and how high will it go?
14. Find the quadratic function which has a maximum value of 5 at $x = 2$, and for which $f(3) = -13$.

15. If $f(x) = ax^2 + bx + c$ is a quadratic function for which $f(0) = -1$, $f(3) = 2$, and $f(4) = 6$, find the coefficients $a$, $b$, and $c$. 
16. Let \( f(x) = \sqrt{x + 3} \) and \( g(x) = 3x \). Find each of the following functions and their domain.

(a) \( f + g \)

(b) \( f - g \)

(c) \( fg \)

(d) \( \frac{f}{g} \)
17. Let \( f(x) = \sqrt{x + 2} \) and \( g(x) = x - 3 \). Find \( f \circ g \) and \( g \circ f \), and their domains.

18. If \((f \circ g)(x) = \frac{2(x^2 - 1)^3 + 5}{(x^2 - 1) + 4}\), find \( f \) and \( g \).