Math 1050 - Quiz 2

1. Suppose \( f(x) = \sqrt{x^2 - 7x + 12} \)
   
   a) Find \( f(c) \)
   b) Find \( f(2x + 1) \)
   c) What is the domain of \( f \)?

2. Use the online graphing tool or your graphing calculator to approximate (one-decimal place accuracy) the zeros of \( f(x) = x^2 - x - 21 \).

3. Use a graphing calculator (or the online grapher) to determine the intervals for which the function \( f(x) = 12x^3 - 9x \) is increasing.

4. Write a formula for \( f^{-1}(x) \), the inverse of the function given by

\[
f(x) = \frac{5x + 2}{4x - 3}.
\]

5. A rock is dropped from the top of a cliff that is 200 feet high.
   
   a) How long will the stone take to hit the ground? Hint: Use the falling body formulas:
      \[
      s(t) = -16t^2 + v_0 t + s_0
      \]
      \[
      v(t) = -32t + v_0
      \]
      What is the speed of the stone when it hits the ground?

6. Find the coordinates of the intercept points of the function

\[
f(x) = 4x^2 + x - 60.
\]

7. Use the online graphing tool or your graphing calculator to approximate (one-decimal place accuracy) the maximum and minimum values of the function

\[
f(x) = 9x^3 - 16x \] is increasing.

8. Suppose \( f(x) = x^2 - 4x + 3 \) and \( g(x) = 4x + 5 \).
   
   a) Find \( f\left(g\left(3\right)\right) \)
   b) Find \( g\left(f\left(3\right)\right) \)
   c) Find \( f\left(g\left(x\right)\right) \)
   d) Find \( g\left(f\left(x\right)\right) \)