1. Section 4.1 Understand Intermediate Value Theorem for Polynomial Functions
   If \( f \) is a polynomial function and \( f(a) \neq f(b) \) for \( a < b \), then \( f \) takes on every value between \( f(a) \) and \( f(b) \) in the interval \([a,b]\).

2. Use Intermediate Value Theorem to show that \( f \) has a zero between 2 and 5/2.
   \[
f(x) = 4x^4 - 9x^3 - 4x + 9
   \]

3. Know how to apply Theorem on Horizontal Asymptotes.

4. Section 4.5 Rational Functions (you'll need to find V.A., H.A., x-intercepts, y-intercepts, and the point \( f \) crosses the H.A., and at least one point in each interval of the domain).
   a) Sketch the graph of \( f(x) = \frac{5x + 3}{3x - 7} \)
   b) Sketch the graph of \( f(x) = \frac{x^2 - 3x - 4}{x^2 + x - 6} \)

5. Section 3.7 Operations on Functions.
   a) For \( f(x) = \frac{x}{x - 2} \), \( g(x) = \frac{3x}{x + 4} \) find
      i. \((f + g)(x), (f - g)(x), (fg)(x), (f/g)(x)\).
      ii. the domain of \( f + g, f - g, fg \).
      iii. the domain of \( f/g \).
   b) For \( f(x) = \frac{x + 2}{x - 1} \), \( g(x) = \frac{x - 5}{x + 4} \) find
      i. \((f \circ g)(x)\) and its domain.
      ii. \((g \circ f)(x)\) and its domain.

6. Know how to recognize the graph of a 1-1 function (Horizontal Line Test)

7. Section 5.1 Inverse Functions
   a. Find the inverse function of \( f(x) = \frac{1}{x + 3} \)
b. Find the inverse function of \[ f(x) = \frac{5x + 3}{2x - 1} \]

i. For each of these you may assume \( f \) is one-to-one.

ii. For each be sure to show that \( f(f^{-1}(x)) = x \) and \( f^{-1}(f(x)) = x \).