MATH Placement Test - B

Name ________________________________

EXAM INSTRUCTIONS
- Your cell phone must be off. You cannot use a calculator.
- You must show all your work. Work neatly. Poor presentation might result on an F.

1. Find the domain of the following functions, expressing your answer using the interval notation:
   a. \( f(x) = \sqrt{3x + 5} \)
   b. \( f(x) = \frac{3x^2(2x - 5)}{6x(3x + 1)(2x - 5)} \)
   c. \( f(x) = \sqrt{(x + 1)(x - 2)} \)
   d. \( f(x) = 3 + 4 \ln(2x - 1) \)

2. Given the function \( f(x) = \frac{3x^2 + 2}{x(x - 1)} \), find
   a. Domain
   b. The x and y intercepts
   c. Vertical and horizontal asymptotes
3. Solve the following equations:
   a. \( x^4 - x^2 = 0 \)
   
   b. \( \log(3x + 2) = 3 \)
   
   c. \( 3^{x-1} = 9 \)

4. Given the function \( f(x) = (x - 2)^2(x + 3)x \), write the intervals on which \( f(x) \) is positive and on which \( f(x) \) is negative (use interval notation).

5. Find the equation of the line with slope equal to \( \frac{2}{3} \) and passing through the point (2,-1)