EXAM 3 - MATH 102

YOUR NAME:_____

Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Solve the equations:

   (a) $6x^3 = 2x - 11x^2$

   (b) $(x + 2)(x + 3) = 20$

2. Solve the equation $|x^2 + 2x - 19| = 16$.

3. Perform the operations and **simplify**:

(a) $\dfrac{8x}{2x^2 + 4x + 2} - \dfrac{3x - 3}{x^2 - 1} =$

(b) $\dfrac{\dfrac{3}{x+2} - \dfrac{4}{x^2 - 4}}{\dfrac{1}{x-2} - \dfrac{3}{x+2}} =$

4. Jayne can paint a 2-bedroom house by herself in x days. Alma, slower and more deliberate, takes four more days than Jayne to paint a 2-bedroom house by herself.

(a) Write a function $P(x)$ for the number of 2-bedroom houses that Jayne and Alma can paint working together as a team in a month (30 days).

(b) Compute how many 2-bedroom houses they can paint together in a month, if Jayne can paint a 2-bedroom house by herself in 6 days.

5. (a) Divide $(3x^3 + x^2 - 7x + 6) \div (3x - 5)$ and write your answer in the form

$$\frac{\text{divident}}{\text{divisor}} = \text{quotient} + \frac{\text{remainder}}{\text{divisor}}$$

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(b) Use division to find the value $P(4)$ if $P(x) = -x^3 + 5x^2 + 3x$.