EXAM 3 - MATH 102

Friday, November 7

George Voutsadakis

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. The sum of the squares of the ages of Anita's two children is 289. If the girl is seven years older than the boy what are their ages? (Please, introduce variables, state clearly their meaning, write an equation reflecting the data and solve. Do not guess.)

2. Solve the absolute value equation $|x^2 + x - 9| = 3$.

3. Perform the long division $(12x^4 - 3x^3 + 7x^2 + 2) \div (3x^2 + 1)$. Then write your answer in the form $(\text{divident}) = (\text{divisor}) \cdot (\text{quotient}) + (\text{remainder})$.

4. Solve the rational equation $\dfrac{2}{x+2} + \dfrac{x}{x-3} + \dfrac{1}{x^2 - x - 6} = 0$.

5. A wine barrel holds 50 gallons of wine. At its bottom it has two taps, one with a small and one with a larger opening. The large tap operating alone can empty the barrel in 5 minutes. If both taps working together can empty the barrel in 3 minutes, in how many minutes can the small tap operating alone empty the wine barrel?