

YOUR NAME: _____

George Voutsadakis

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. Find the quotient and the remainder of the division $(x^3 + 3x + 2) \div (x + 3)$.

2. Solve the rational equation $5 + \frac{x+1}{x-1} = 3 - \frac{5x-3}{x-1}$.

3. Simplify the complex fraction $\frac{x^{-2} - y^{-2}}{x^{-2}y^{-1} + x^{-1}y^{-2}}$.

4. George and Michelle are hiking a trail on the Lake Superior shore. George averages 4 miles per hour and Michelle averages 3 miles per hour. If they start together in the morning, but George gets to the final meeting destination 2 hours and 30 minutes ahead of Michelle, how many miles did they each hike for the day?

5. Simplify the following expressions (write the answer without negative or rational exponents):

(a) $(2a^{1/2}b^{-1/3})^6$

(b) $(2\sqrt{5} + \sqrt{2})(3\sqrt{5} - \sqrt{2})$