

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Chaparral High School**  
**Algebra II Review for Exam on Chapter 8**  
**Rational Functions**

This is a 50 minute exam to be completed without the aid of calculators. Please *show all appropriate work* and place answers in *lowest terms*. Please work independently. This exam will be scaled to 100 points. Good Luck!

1) (10 points) Sketch the graph of the function below. Identify all asymptotes and all intercepts. State the domain and range of this function.

$$f(x) = \frac{2x^2 - 18}{x^2 - 4}$$

2) (6 points) Perform the operations on the rational expressions and simplify.

$$\frac{x^2 - 5x - 14}{x^3 - 6x^2 - 7x} \cdot (x^2 - 4x - 5) \div \frac{x^2 + x - 30}{2x}$$

3) (8 points) Solve the rational equation below.

$$\frac{10x^2 + x - 2}{2x^2 - 9x - 18} = \frac{4x}{x - 6} + \frac{2x - 3}{2x + 3}$$

4) (6 points) Perform the operations and simplify.

$$\frac{x}{x^2 + 2x + 1} + \frac{1}{x^2 + 5x + 4}$$

5) (6 points) Simplify the complex fraction.

$$\frac{\frac{x}{x-3} - \frac{2}{3}}{\frac{10}{3x} + \frac{x^2}{x-3}}$$

6) (10 points) Sketch the graph of the function below. Identify all asymptotes and all intercepts. State the domain and range of this function.

$$f(x) = \frac{(2x - 6)(x^2 + 3x - 10)}{(x - 2)(x^2 + x + 2)}$$