RATIONAL FUNCTIONS

Graded Homework (30 Points) – Due Monday

*For each rational function below. perform the following parts first without a graphing calculator. Only use a calculator at the END to check your work. You MAY use your notes, textbook, and calculator and even your classmates!*

COMPLETE THE FOLLOWING 5 PARTS (**FAITS**) FOR EACH PROBLEM ON THE ANSWER SHEET. SHOW ALL WORK. U*SE A SEPARATE SHEET OF PAPER IF YOU PREFER!*

1. **F**actor completely.
2. **A**symptotes: Determine the equations of any asymptotes (horizontal, vertical, slant, and parabolic) if any.
3. **I**ntercepts: Determine the x and y intercepts
4. **T**able: Determine the behavior of the function near the vertical asymptotes (if any).
5. **S**ketch a graph of the function and sketch a dotted line of any asymptotes (or an open circle at any holes).

**Problem 1:**

$$r\left(x\right)= \frac{x^{2}-9}{x^{2}-4}$$

**Problem 2:**

$$g\left(x\right)= \frac{x^{2}+x-6}{x^{2}-25}$$

**Problem 3:**

$$t\left(x\right)= \frac{(x^{2}-4)(x+3)}{x^{2}+2x-3}$$

**Problem 4:**

$$u\left(x\right)= \frac{x^{3}-9x}{x+2}$$

NOTE: THERE IS A BACK PAGE WITH PROBLEMS 5, 6, and 7.

**ANSWER SHEET:**

**Problem 1:**

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PART 2: (section 3.5 and 3.6). Be sure to show ALL work.

5.) Complete the operation. Write your answer as a+bi.



6.) $i^{23} =$

7.) A polynomial is given below.

a.) Find ALL the zeros of the polynomial function

b.) Write the polynomial in its fully factored form.

