The purpose of Foundational Studies is to broaden the understanding of what math is and why math is important to the non-math major. On the 143 web page, there is a link to the rubric of the Mathematics Discipline requirements for Foundational Studies. On each test, I will be providing one question for you to grade based on the rubric.

Listed below are three questions which will assist to prepare the students for the test question. Please provide these questions in the last five minutes of class.

Communications of mathematical Ideas:

Graph the equation \( f(t) = \frac{27t}{t^3 + 10} \)

Since this is a rational function can you describe the vertical and horizontal asymptotes? How many vertical asymptotes could this graph have? After looking for all the vertical asymptotes, can you explain why there appears to be only one?

What happens to the graph as you move to the right? (as \( t \) becomes large?)

Formulate and justify generalization

The rational function chosen was based on a model of the amount of medication in the bloodstream, with \( t \) representing the amount of time that has elapsed since the medication was administered and \( f(t) \) representing the amount of medication in the bloodstream.

Can you define the region of the graph that would be appropriate for this problem and explain why? Draw a graph of the appropriate region.

Select an appropriate strategy.

After the medication reaches its maximum, the amount in the bloodstream starts to drop. When the medication reaches a value halfway between the maximum and zero, Dr.’s decide to give a second dose (equal to the first). Draw the graph of the amount of medication in the bloodstream and explain why you chose to draw the graph as you did.