Rules for Graphing Rational Functions

Step 1. Factor and cancel if possible –

IF a factor cancels, a hole on the graph is created at that number.

Step 2. To find zeros (x-intercepts) -

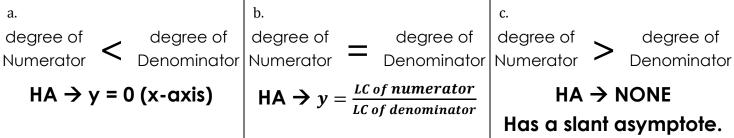
Set numerator =0 and solve.

Step 3. To find vertical asymptotes (VA) -

Set denominator =0 and solve. These are always x = # equations.

Step 4. To find horizontal asymptotes (HA) -

Look at the degree of the numerator & denominator & determine which is true below:



Step 5. To find slant asymptotes (SA) -

Use long/synthetic division to find the equation of the slant asymptote (y = mx + b).

<u>Step 6.</u> To find y–intercept –

Some rational functions will have a y-intercept (some will not). To find the y-intercept, find f(0).

Step 7. Sketch graph.

Draw lines for the graph from asymptote to asymptote through the zeros. If needed, find more points using the table in your calculator.