Rational Polynomials: Graphing and Asymptotes

Find the intercepts, if there are any.
Step 1: Set the numerator to 0 to solve for horizontal intercepts.
Step 2: Set the x to 0 to solve for vertical intercept.
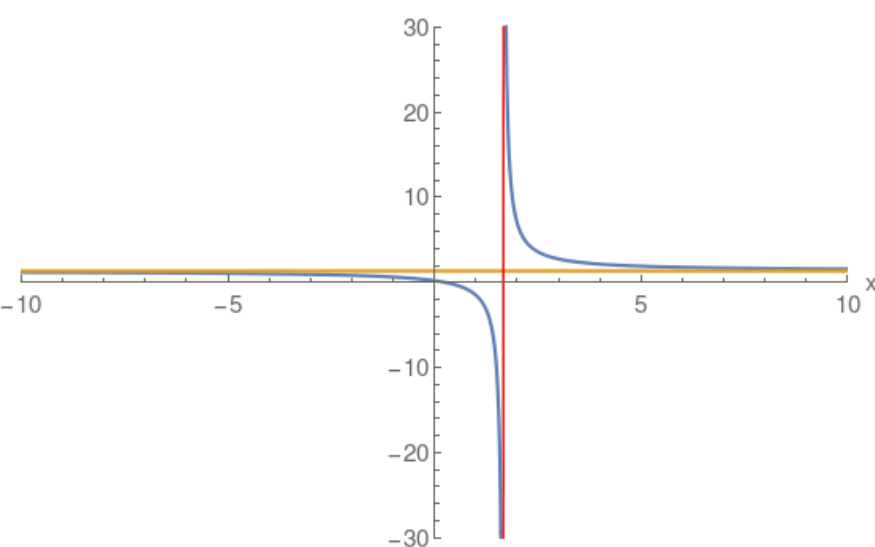**Step 3:** Set the denominator to 0 to solve for vertical asymptotes.
Step 4: Perform a long division to find the quotient which specifies the oblique asymptote.

Note: Blue curve the actual Rational function.
Red and Gold asymptotes.

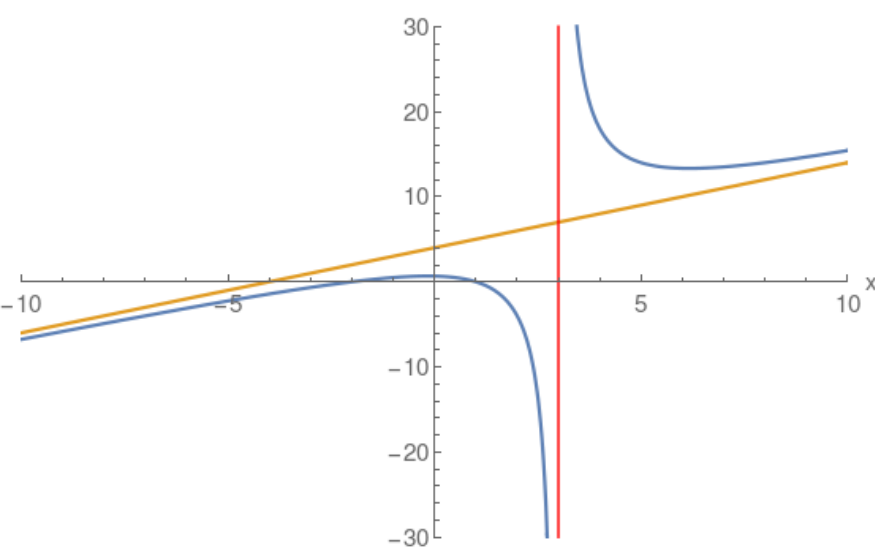## Example: Horizontal Asymptote

$$\frac{4x-1}{3x-5}$$

Example: Oblique Linear Asymptote

$$\frac{(x-1)\,(x+2)}{x-3}$$

Example: Multiple Vertical Asymptotes

$$\frac{x+3}{x\,(x+1)}$$