

Graphing Rational Functions

Vertical Asymptotes: denominator = 0

Holes: cancel out = 0

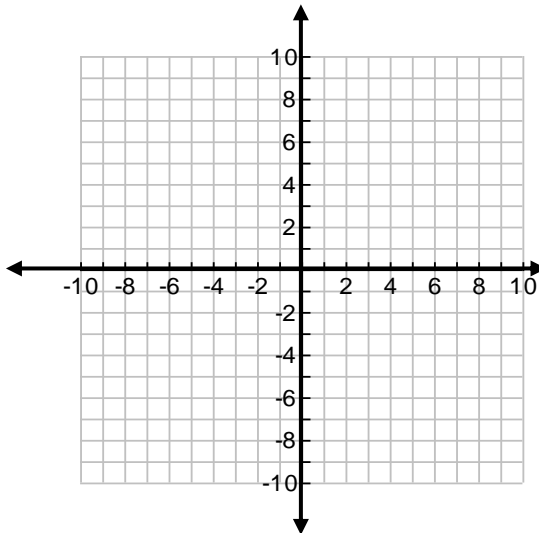
Horizontal Asymptotes:

1. Highest Exponent on bottom --- $y = 0$
2. Highest Exponent is same on top & bottom
3. Highest Exponent on the top --- slant asymptote

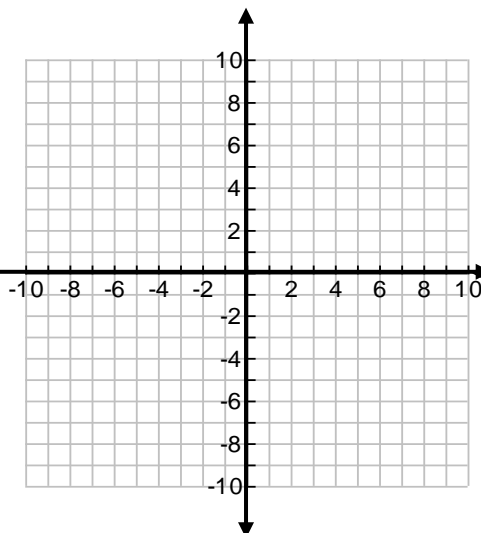
Steps:

1. Factor the rational function (the top & bottom)
2. Set denominator = 0 and solve for the variable
3. Label the restrictions as vertical asymptote or hole
4. Use the rules to find horizontal asymptote
5. Graph asymptotes
6. Make x,y tables to make the shape of the graph

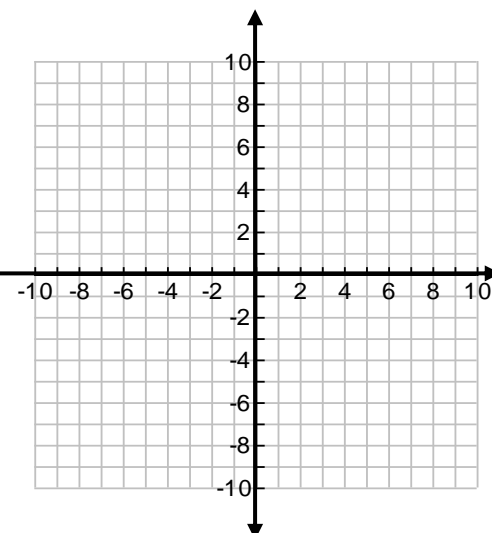
1. $f(x) = \frac{x+3}{x^2+4x+3}$



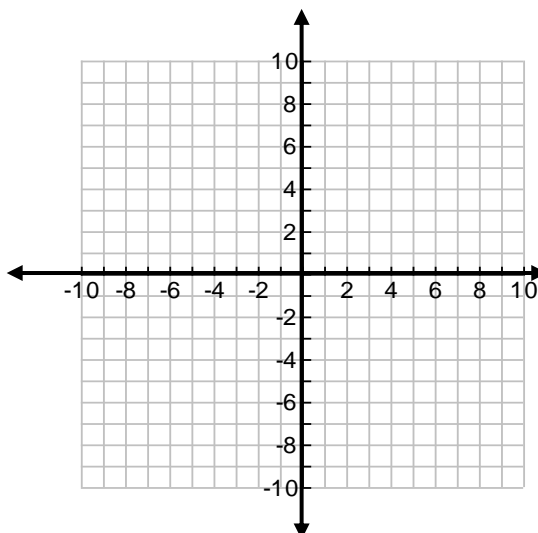
2. $f(x) = \frac{x-5}{x^2+25}$



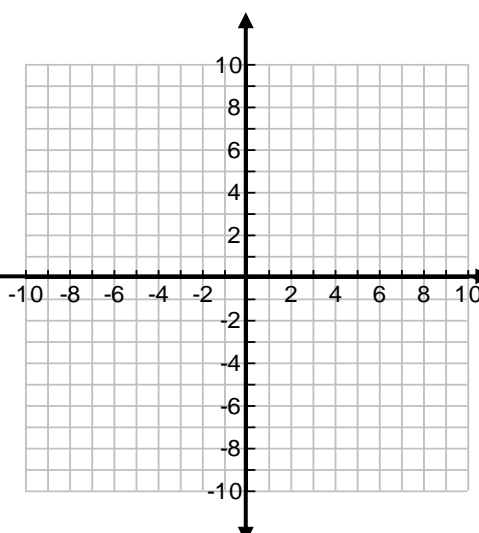
3. $f(x) = \frac{x^2+4x}{x^3+7x^2+12x}$



4. $f(x) = \frac{1}{x-2} + 5$



5. $f(x) = \frac{2x}{3x^2+5x}$



6. $f(x) = \frac{3x-1}{3x^2+5x-2}$

