GRAPHING RATIONAL FUNCTIONS

$$f(x) = \frac{P(x)}{Q(x)}$$

1. **a.** Determine vertical asymptotes and points of discontinuity (if any) using each real zero of the denominator *Q(x)*

b. Graph and label

2. **a.** Determine horizontal asymptote (if any) using degrees of the numerator *P(x)* and denominator *Q(x)*:

I. Degree of *P(x)* < Degree of *Q(x)* $y = 0$

II. Degree of *P(x)* > Degree of *Q(x)* None

III. Degree of *P(x)* = Degree of *Q(x)* $y = \frac{a}{b}$

b. Graph and label

3. **a**. Calculate *y*-values near vertical asymptotes

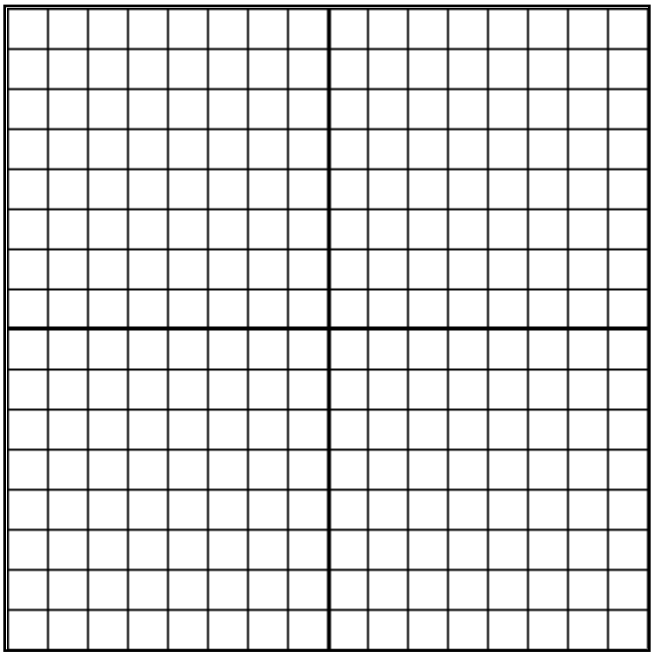
b. Finish graphing

$$y = \frac{x+3}{x^2-6x+5}$$

1. Vertical asymptotes/holes of discontinuity:

2. Horizontal asymptote:

$$y = \frac{x+3}{x^2-6x+5}$$

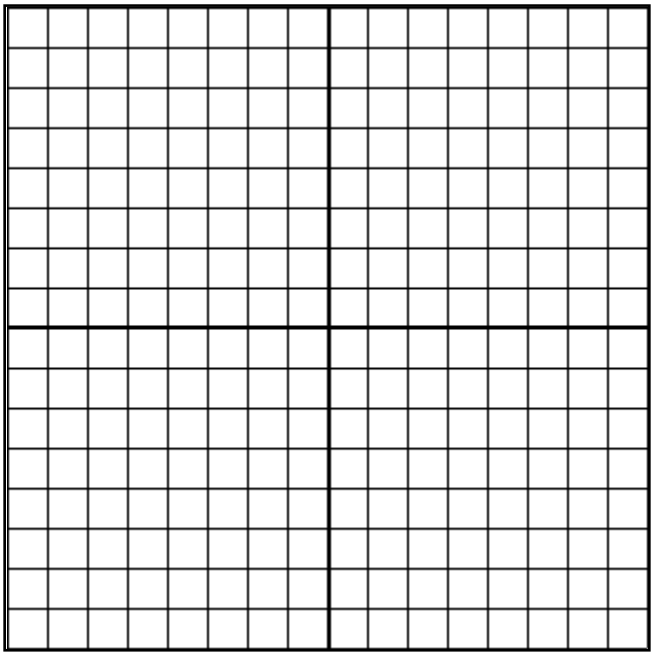


$$y = \frac{4x-1}{x+2}$$

1. Vertical asymptotes/holes of discontinuity:

2. Horizontal asymptote:

$y = \frac{4x-1}{x+2}$

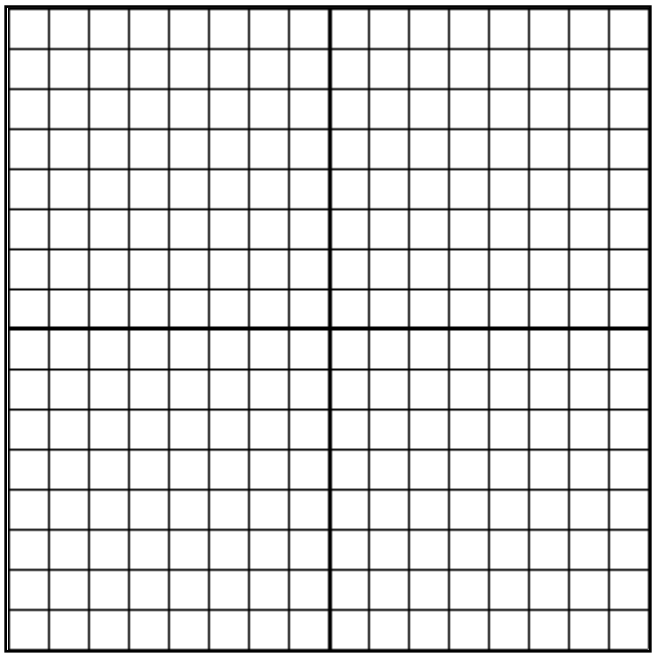


$$y = \frac{x^2 + 2x}{x + 2}$$

1. Vertical asymptotes/holes of discontinuity:

2. Horizontal asymptote:

$y = x$



$$y = \frac{x-2}{x^2+x-6}$$

1. Vertical asymptotes/holes of discontinuity:

2. Horizontal asymptote:

$$y = \frac{1}{x+3}$$