

Graphing Rational Functions of the form $f(x) = \frac{p(x)}{q(x)}$

- Step 1.* Find all vertical asymptotes
- Step 2.* Find horizontal or oblique asymptotes
- Step 3.* Find the y intercepts, let $x = 0$
- Step 4.* Find the x intercepts, let $y = 0$
- Step 5.* Determine if the graph will intersect the horizontal or oblique asymptotes, set eqn = to HA or oblique asymptote
- Step 6.* Plot selected points in each interval determined by the vertical asymptotes

Graph the following:

1. $f(x) = \frac{2x-6}{x+2}$ VA = $x = -2$, HA = $2/1 = 2$, $y_{\text{int}} = -6/2 = -3$, $x_{\text{int}} = 3$; No intersection of $f(x) = \text{HA}$ - does not cross HA

2. $h(x) = \frac{x^2-4}{x-2}$

3. $g(x) = \frac{x+6}{x^2+9x+18}$

4. $q(x) = \frac{2x^2-x-1}{x^2-x-12}$

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

6. $m(x) = \frac{x-3}{x^2-3x}$

7. $n(x) = \frac{x^2+5x-6}{2x-2}$

8. $p(x) = \frac{(x+8)(x-4)}{(x+8)(x+5)}$