Graphing Rational Functions with Holes

Name _____

Date _____ Period _____

A function that can be written in the form...

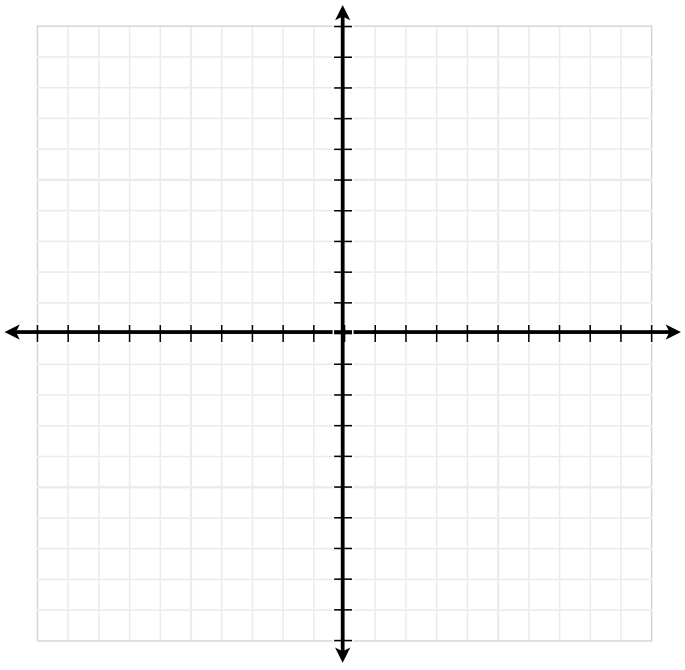
$$y = \frac{p(x)}{q(x)} \quad \text{where } p(x) \text{ and } q(x) \text{ are polynomials}$$

If $p(x)$ and $q(x)$ have a common factor that is canceled a hole is formed in the graph.

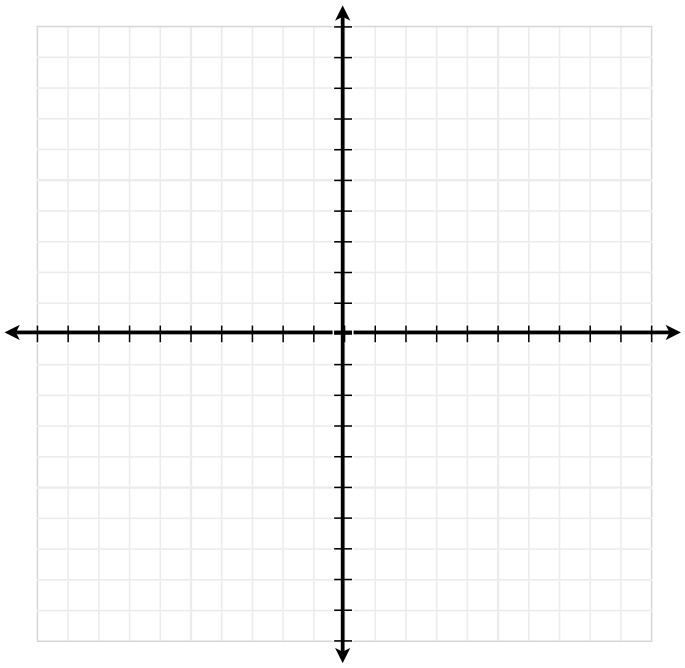
A hole is an omitted point on the graph.

Holes are formed when factors of a rational function are canceled.

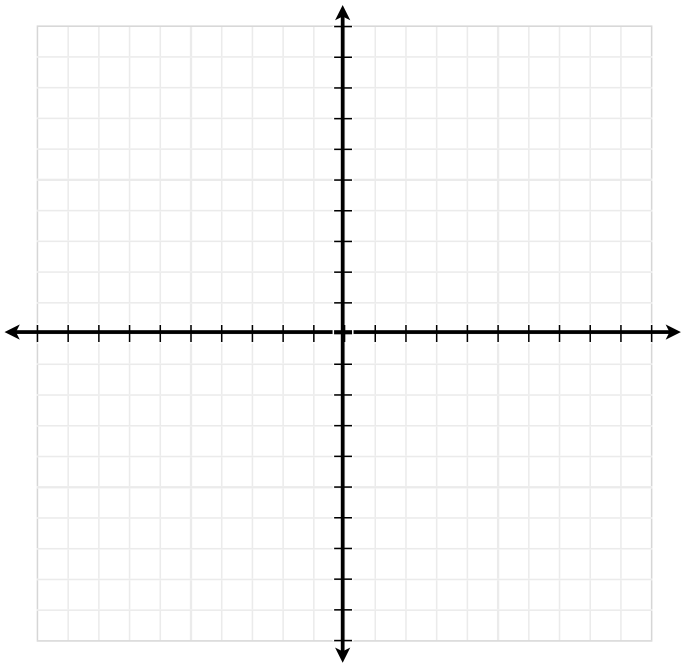
$$y = \frac{x^2 - 16}{x - 4}$$



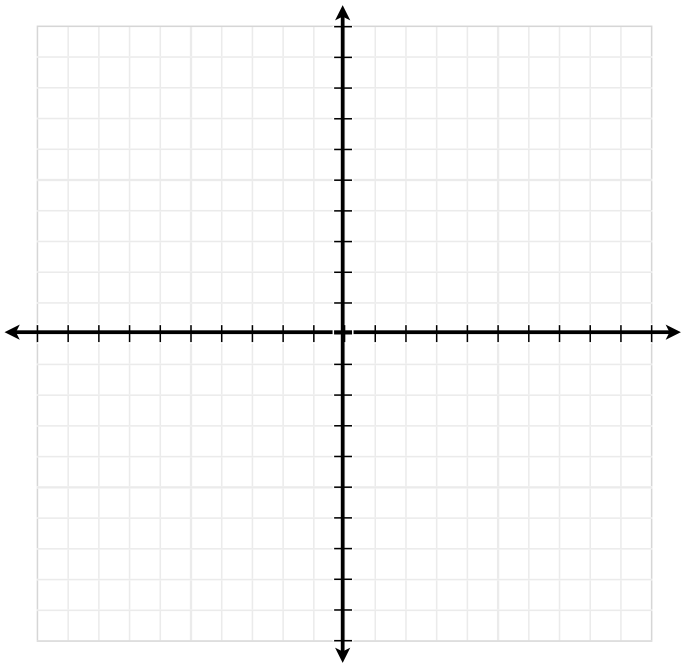
$$y = \frac{2x^2 + x - 6}{x + 2}$$



$$y = \frac{x^3}{x}$$



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



$$y = \frac{-2x + 2}{x^2 + 3x - 4}$$