

Graphs of Rational Functions

Prepared for Mth 163: Precalculus 1 Online

By Richard Gill

Through funding provided by a
VCCS LearningWare Grant

A **rational function** is a function that can be expressed in the form

$$y = \frac{f(x)}{g(x)} \quad \text{where both } f(x) \text{ and } g(x) \text{ are polynomial functions.}$$

Examples of rational functions would be:

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

$$f(x) = \frac{2x}{3 - x}$$

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

Over the next few frames we will look at the graphs of each of the above functions.

First we will look at $y = \frac{1}{x - 2}$.

This function has one value of x that is banned from the domain. What value of x do you think that would be? And why?

If you guessed $x = 2$, congratulations. This is the value at which the function is undefined because $x = 2$ generates 0 in the denominator.

Consider the graph of the function. What impact do you think this forbidden point will have on the graph?

Think before you click.