Chapter 1: Functions and Models Rational Functions Book Title: Calculus: Early Transcendentals Printed By: Troy Jeffery (tradozprime@gmail.com) © 2018 Cengage Learning, Cengage Learning

Rational Functions

A **rational function** f is a ratio of two polynomials:

$$f\left(x
ight) =rac{P\left(x
ight) }{Q\left(x
ight) }$$

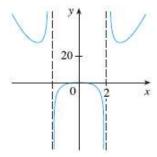
where P and Q are polynomials. The domain consists of all values of x such that $Q(x) \neq 0$. A simple example of a rational function is the function f(x) = 1/x, whose domain is $\{x \mid x \neq 0\}$; this is the reciprocal function graphed in Figure 14. The function

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

is a rational function with domain $\{x \mid x \neq \pm 2\}$. Its graph is shown in Figure 16.

Figure 16

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



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