

The Method of Green's Functions

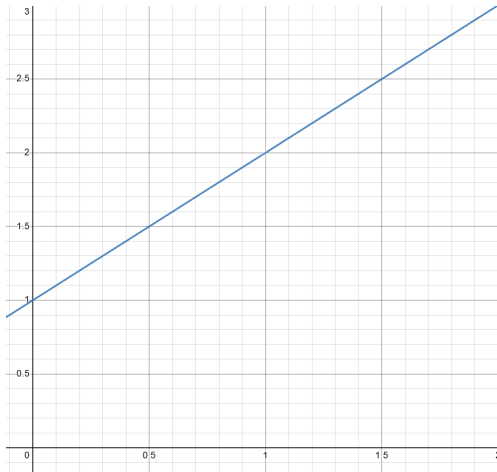
Ryan Coyne

NHTI-Concord's Community College

5/5/2023

The Limit

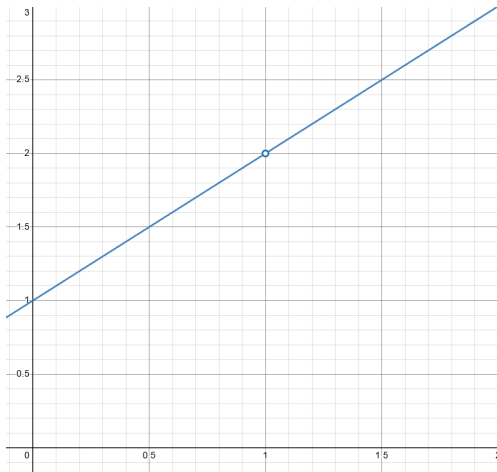
$$f(x) = \frac{x^2 - 1}{x - 1}$$



The Limit

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

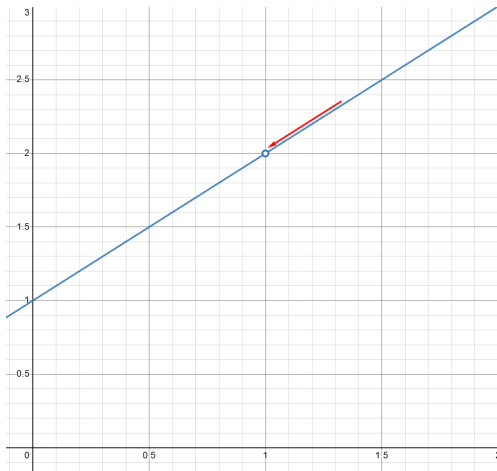
$$f(1) = \frac{1^2-1}{1-1} = \frac{0}{0}$$



The Limit

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

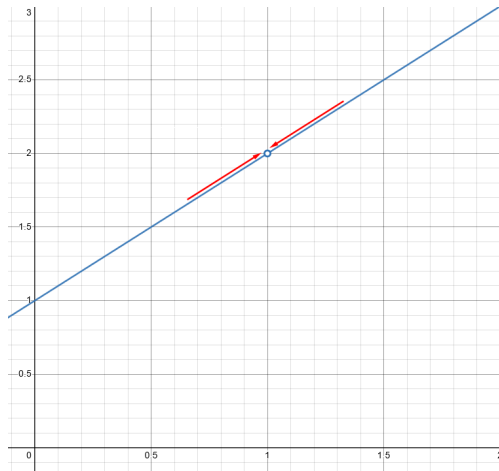
$$f(1) = \frac{1^2-1}{1-1} = \frac{0}{0}$$



The Limit

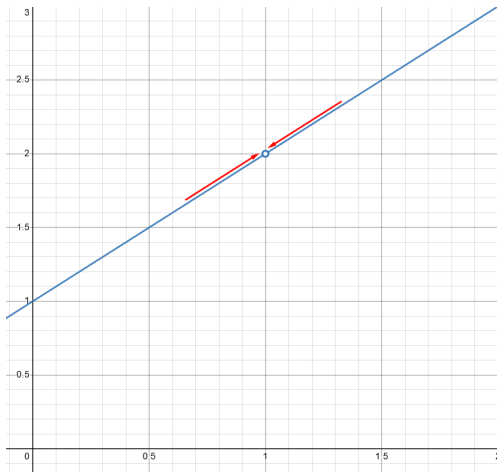
$$f(x) = \frac{x^2-1}{x-1}$$

$$f(1) = \frac{1^2-1}{1-1} = \frac{0}{0}$$



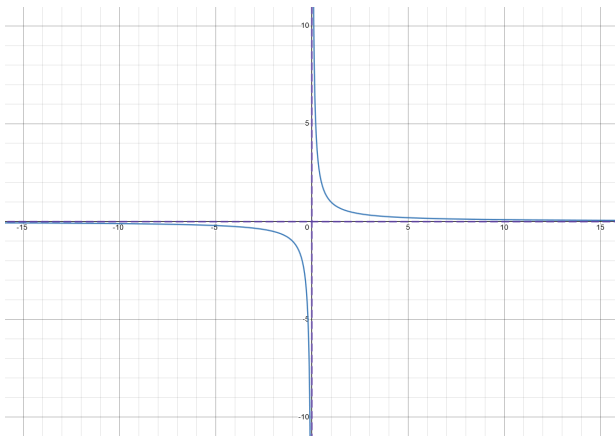
The Limit

$$\lim_{x \rightarrow 1} \frac{x^2 - 1}{x - 1} = 2$$



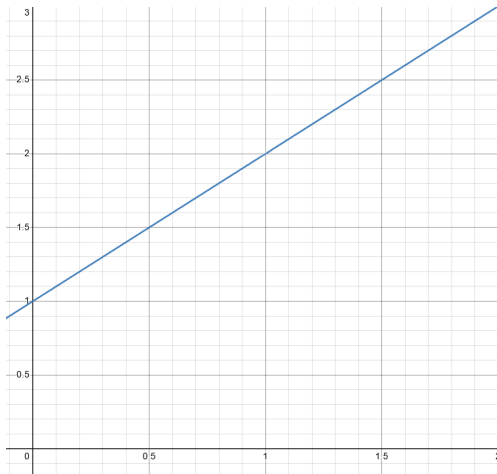
The Limit

$$f(x) = \frac{1}{x}$$



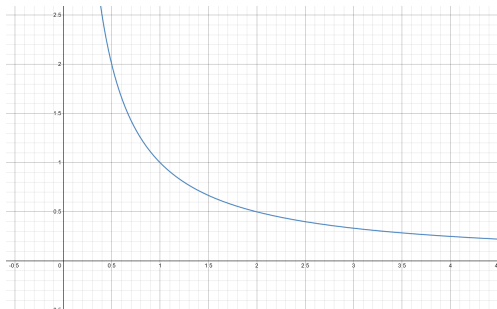
The Derivative

$$f(x) = x + 1$$



The Derivative

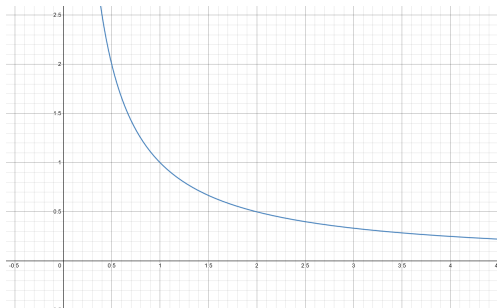
$$f(x) = \frac{1}{x}$$



The Derivative

$$f(x) = \frac{1}{x}$$

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

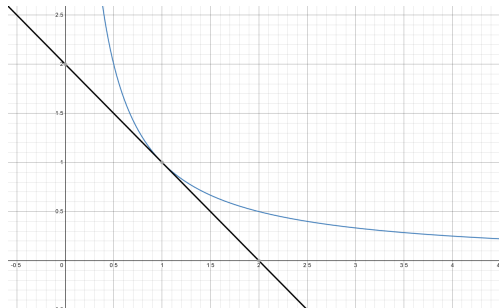


The Derivative

$$f(x) = \frac{1}{x}$$

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

$$f'(1) = 1$$



The Anti-Derivative

$$\int f(x)dx = F(x)$$

The Anti-Derivative

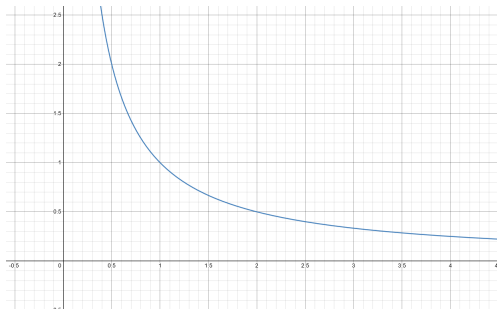
$$\int f(x)dx = F(x)$$

$$f(x) = \frac{1}{x}$$

$$\int \frac{1}{x}dx = \ln x + c$$

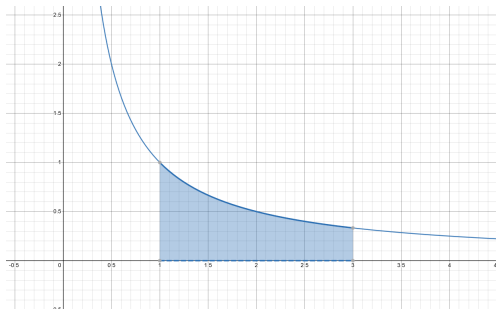
The Integral

$$f(x) = \frac{1}{x}$$



The Integral

$$f(x) = \frac{1}{x}$$



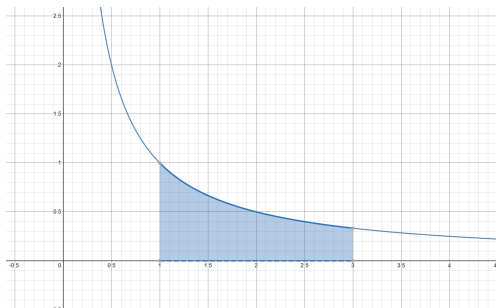
The Integral

$$\int_a^b f(x)dx = F(a) - F(b)$$

The Integral

$$f(x) = \frac{1}{x}$$

$$\int_1^3 f(x) dx = F(3) - F(1)$$
$$= \ln(3) - \ln(1)$$



Differential Equations

The Adjoint Operator

The Dirac Delta Function

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