

Quotient

Quotient Rule. = division.

$$y = \frac{u}{v} \quad \frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$y = \frac{2x-3}{5x+1}$$

$$u = 2x - 3$$

$$v = 5x + 1$$

$$\frac{du}{dx} = 2$$

$$\frac{dv}{dx} = 5$$

$$\frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$= \frac{2(5x+1) - 5(2x-3)}{(5x+1)^2}$$

$$= \frac{\cancel{10x} + 2 - \cancel{10x} + 15}{(5x+1)^2}$$

$$= \frac{17}{(5x+1)^2}$$

$$y = \frac{7x-3}{5x+4}$$

$$u = 7x-3$$

$$\frac{du}{dx} = 7$$

$$v = 5x+4$$

$$\frac{dv}{dx} = 5$$

$$\frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$= \frac{7(5x+4) - 5(7x-3)}{(5x+4)^2}$$

$$= \frac{\cancel{35x} + 28 - \cancel{35x} + 15}{(5x+4)^2}$$

$$= \frac{43}{(5x+4)^2}$$

$$y = \frac{7x-1}{5-3x}$$

$$u = 7x - 1$$

$$\frac{du}{dx} = 7$$

$$v = 5 - 3x$$

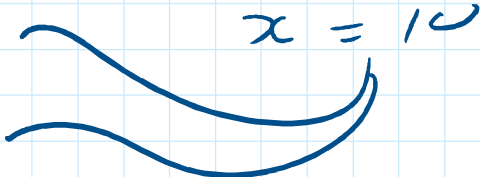
$$\frac{dv}{dx} = -3$$

$$\frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$= \frac{7(5 - 3x) + 3(7x - 1)}{(5 - 3x)^2}$$

$$= \frac{35 - 21x + 21x - 3}{(5 - 3x)^2}$$

$$= \frac{32}{(5 - 3x)^2}$$

$$y = \frac{e^x}{\ln x} \quad x = 10$$


$$u = e^x$$

$$\frac{du}{dx} = e^x$$

$$v = \ln x$$

$$\frac{dv}{dx} = \frac{1}{x}$$

$$\frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$= \frac{e^x \ln x - e^x \left(\frac{1}{x}\right)}{(\ln x)^2}$$