

September 14

SWBAT:

Take the derivative using  
the power rule and apply the  
derivative to the slope

Power Rule:

$$f(x) = x^n$$

$$f'(x) = nx^{n-1}$$

$$f(x) = x^7 \quad f'(x) = 7x^6$$

$$y = 3x^{-5} \quad \frac{1}{3x^{-6}} \quad 3 \frac{1}{x^5} = y$$

$$y' = -15x^{-6} \\ 3(-5)x^{-6} = -15\left(\frac{1}{x^6}\right) = \frac{-15}{x^6}$$

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

$$y = x^{-3} + 2x^5$$

$$\frac{dy}{dx} = -3x^{-4} + 10x^4$$

$$g(x) = \frac{1}{x^{10}} + \sqrt{x}$$

$$g(x) = x^{-10} + x^{1/2}$$

$$g'(x) = -10x^{-11} + \frac{1}{2}x^{-1/2}$$

What does the derivative tell you about a function?

Slope at a point

Find the  
slope of the  
tangent line  
to  $y = x^3 - x$   
at  $(3, 24)$

† write  
an equation  
of the line

$$y' = 3x^2 - 1$$

$$y'(3) = 3(3)^2 - 1 = 26$$

↑  
slope

$$y - 24 = 26(x - 3)$$

$$y - y_1 = m(x - x_1)$$