

Monday, September 9

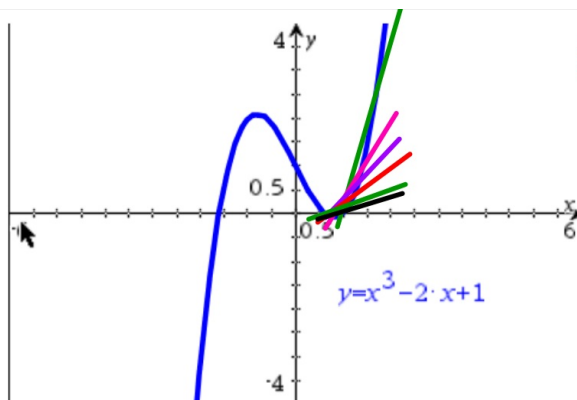
Describe how to find the slope between two points.

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{rise}}{\text{run}}$$

September 9

Students will verbally explain how to find the derivative

(using the words:
slope, limit, exponent, coefficient...)



the slope through the points:

$$\text{slope} = \frac{0 - 1.875}{1 - (-.5)} = \frac{-1.875}{1.5}$$

$$\begin{aligned} x=1, & \quad x=-.5 \\ y=1^3-2(1)+1 & \quad y=(-.5)^3-2(-.5)+1 \\ y=1-2+1 & \quad y=-.125+1+1 \\ y=-1+1=0 & \quad y=1.875 \end{aligned}$$

	Points	Slope
Andre	$x = 1$ and $x = 2$	5
Jonah	$x = 1$ and $x = 1.5$	2.75
Carmen	$x = 1$ and $x = 1.4$	2.36
Bochra	$x = 1$ and $x = 1.3$	1.99
Kessanet	$x = 1$ and $x = 1.2$	1.64
Tyler	$x = 1$ and $x = 1.1$	1.31
Dillon	$x = 1$ and $x = .9$.71
Shea	$x = 1$ and $x = .8$.44
Max	$x = 1$ and $x = .7$.19
Joe	$x = 1$ and $x = .6$	-.04
Josh	$x = 1$ and $x = .5$	-2.5
Devonna	$x = 1$ and $x = 0$	-1
	$x = 1$ and $x = -.5$	-1.25
	$x = 1$ and $x = -1$	
	$x = 1$ and $x = -1.5$	
	$x = 1$ and $x = -2$	

limit of
slope is

$$\begin{aligned} x=1, & \quad x=a \\ f(1), & \quad f(a) \end{aligned}$$

$$\lim_{a \rightarrow 1} \frac{f(a) - f(1)}{a - 1} = 1$$

$$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{x+h-x}$$

$$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

Derivative

- tells you the slope of the graph at one point
- tells you the instantaneous rate of change
- Definition of the derivative:

$$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} = \frac{d}{dx}(f(x))$$

Power Rule

$$\frac{d}{dx}(x^n) = nx^{n-1}$$

(the derivative of x^n)

$$\frac{d}{dx}(x^5) = 5x^4$$

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

find y'

(y' = derivative of y)

Derivative of a constant

Derivative of x

$$y = x^3 - 2x^1 + 1x^0$$

$$y' = 3x^2 - 2(1 \cdot x^0) + 1(0 \cdot x^{-1})$$

$$y' = 3x^2 - 2 + 0$$

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

$$= 0$$

$$= 1$$

→ at $x = 1$

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

$$= 3(1) - 2 = 1$$

slope of y at $x = 1$