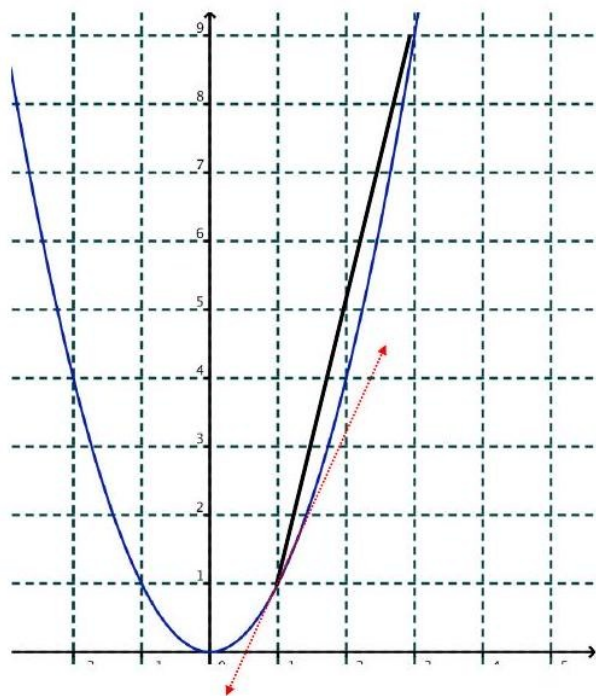


# Math 1210 #7

## Calculus: The Slope of A Curve

How do we find the slope of a curve?



Try to find the slope of this curve at the point  $(1,1)$ .  
First point  $(1,1)$

Second point:	Slope at that point:
$(3,9)$	
$(2,4)$	
$(1.1, 1.21)$	
$(1.01, 10.201)$	
$(1+h, (1+h)^2)$	

Slope to the left of the origin?

Slope to the right of the origin?

**EX 1**

Find the slope of the curve  $y = x^2 - 5x$  at  $(2, -6)$

hint: Calculate the slope between  $(2, -6)$  and  $(2 + h, f(2 + h))$

**Definition**

The slope of a function,  $f$ , at a point  $x = (x, f(x))$  is given by

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

$f'(x)$  is called the derivative of  $f$  with respect to  $x$ .

Other names for  $f'(x)$  :

slope  
instantaneous rate of change  
speed  
velocity

**EX 2**

Find the derivative of  $f(x) = 4x - 1$

### EX 3

Find the derivative of  $f(x) = x^2 + 4x - 1$

What is the slope at point  $P$  ?

