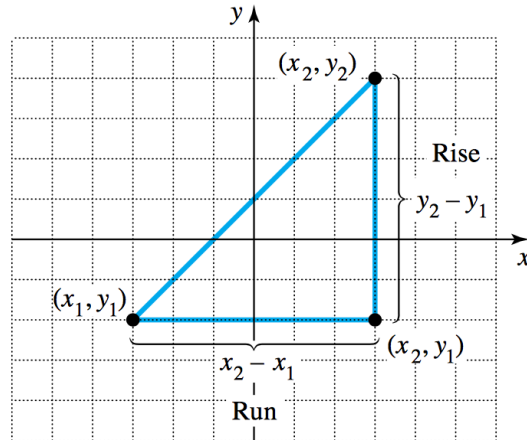


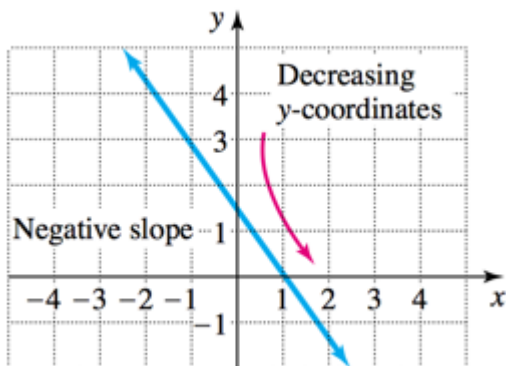
# All About Slopes



$$\text{Slope (measures steepness of a line)} = m = \frac{\text{rise}}{\text{run}} = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$$

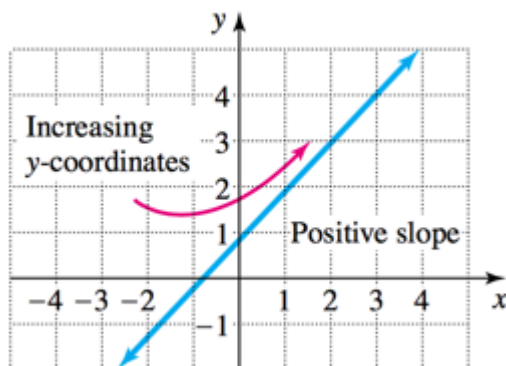
## Types of Slopes

Slopes come in 4 different types: negative, positive, zero, and undefined.



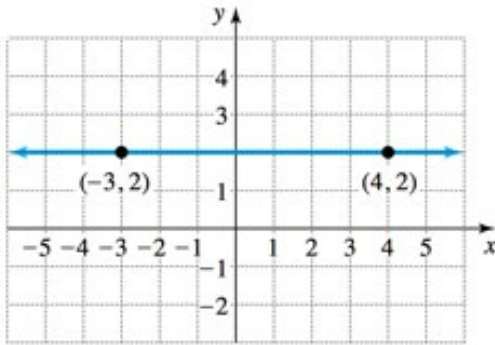
### Negative Slope

Line goes downward to the right  
as  $x$  increases.  
 $m < 0$



### Positive Slope

Line goes upward to the right  
as  $x$  increases.  
 $m > 0$

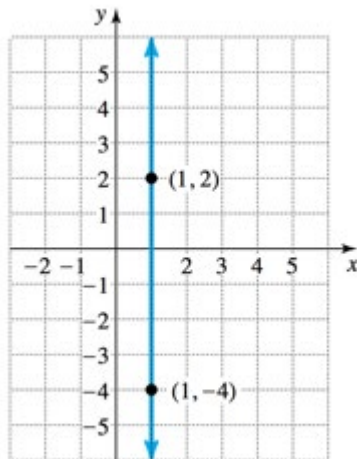


### Zero Slope

A horizontal line has a slope of zero.

$$m = 0$$

For any two points, the  $y$  values will be equal to the same real number. The equation will be  $y = \text{some number}$ .



### Undefined Slope

A vertical line has an undefined slope.

$m$  is undefined

For any two point, the  $x$  values will be equal to the same real number. The equation will be  $x = \text{some number}$ .

## Finding Rate of Change

The slope of a line can also be interpreted as the “average rate of change”. It tells us how fast  $y$  is changing with respect to  $x$ .

### The slope of a graph is a rate of change:

