(1) Online HW accessible to all now!

see video in meetings channel

- cloud.fairmontstate.edu
  ↳ login is normal one
- https://csmath.~~~

login:
username: uca
password: uca

(2) open class meetings up

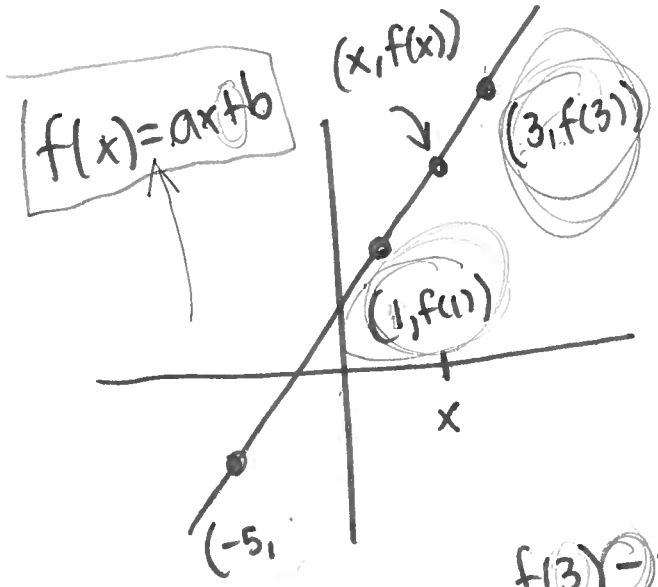
Linear fnct + Slope (HW3)

$f(x) = ax + b$ ← parameters

variable

Any function of this type, where a and b are fixed numbers, has a graph which is a straight line.

if so, what is its slope?



$a(b+c) = ab + ac$

$-(a+b) = (-1)(a+b) = (-1)a + (-1)b$
$= -a - b$

$$\text{slope} = \frac{f(3) - f(1)}{3 - 1} = \frac{(3a+b) - (a+b)}{2}$$

($f(3)$ = $3a+b$, $f(1)$ = $a+b$)

$$= \frac{3a + b - a - b}{2}$$

$$= \frac{2a + 0}{2} = a$$

$-5 = (-1)5$

Conclusion: slope is a

Ex: $f(x) = 3x + 5$

slope is 3

Ex: $g(x) = 2 - 5x$

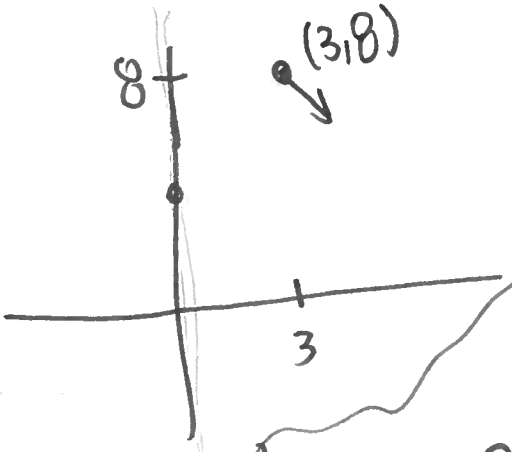
$= 2 + (-1)(5)x$

slope $= (-1)5 = -5$

Ex: Find a and b for $f(x) = ax + b$ if slope is -2 ✓ and $f(3) = 8$

$f(3) = 8$: input (x) = 3, output (y) = 8

Soln:



B/C slope is -2, we know

$$f(x) = -2x + b$$

$$8 = f(3) = -2(3) + b$$

8: given; $-2(3)$: computation

$$8 = -6 + b$$

→ "b is a number w/ property that when I subtract 6 from it, I get 8"

Golden Rule of eqt: an equation remains true as long as you do same thing to both sides

Add 6 to both sides:

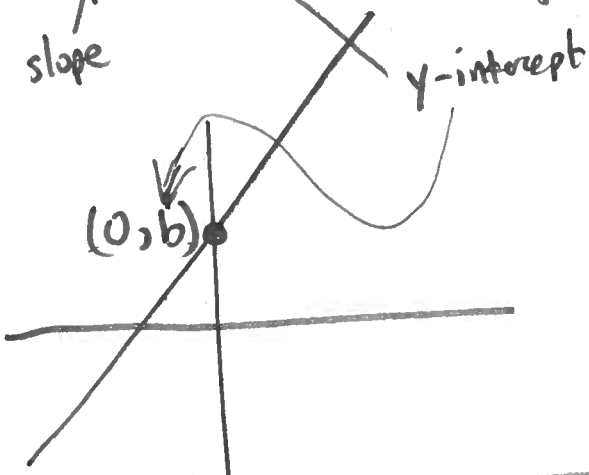
$$8+6 = -6+b+6$$

$$14 = 0+b \Rightarrow \boxed{b=14}$$

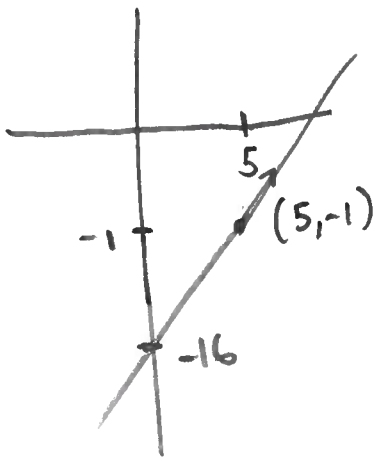
Therefore, $\boxed{f(x) = -2x+14}$

$f(x) = ax+b$ ← slope, ← y-intercept

$f(0) = a\cdot 0 + b$



Ex: Find a & b in $f(x) = ax+b$ if slope is 3 ✓ and $f(5) = -1$.



Soln: slope $= 3 = a$

$\boxed{f(x) = 3x+b}$

$f(x) = 3x-16$

computed ↓

$-1 = f(5) = 3(5)+b = 15+b$

↑ given

$-1 = 15+b$

Subtr 15 from both sides → $-1-15 = 15+b-15$ → $\boxed{-16 = b}$

a, b for

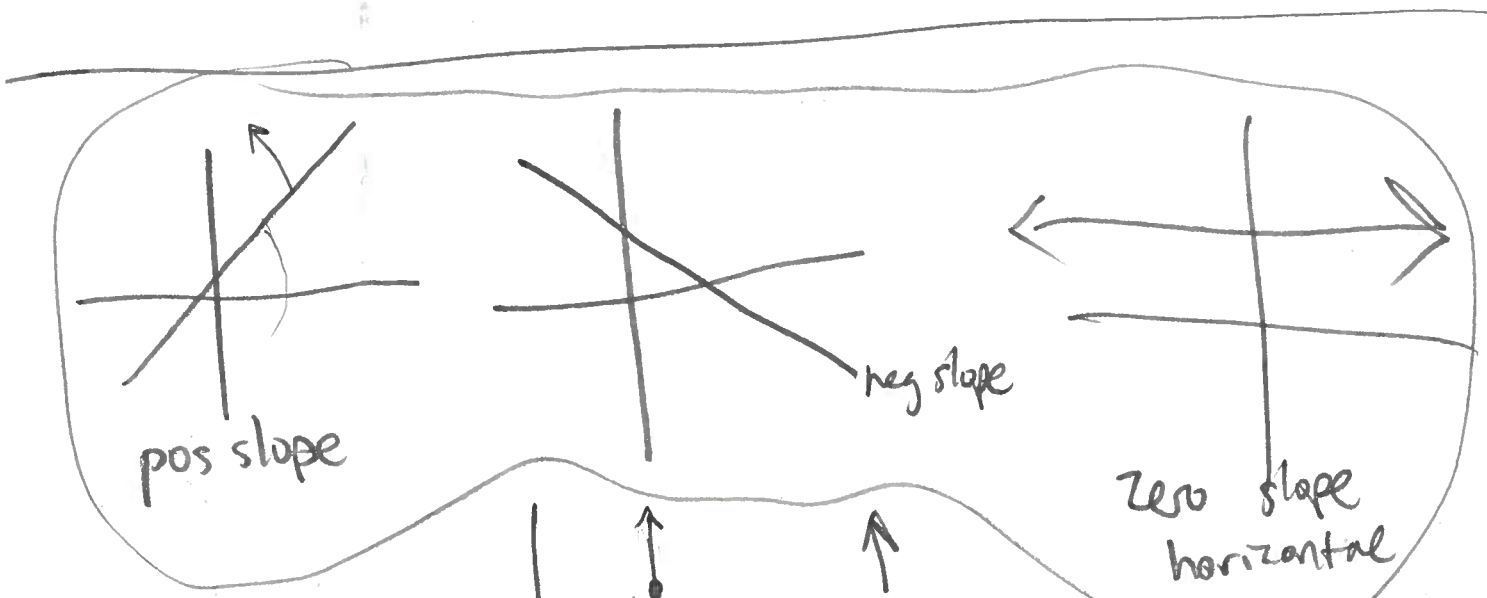
- Find $f(x)=ax+b$ if slope $=8$ and $f(-1)=2$

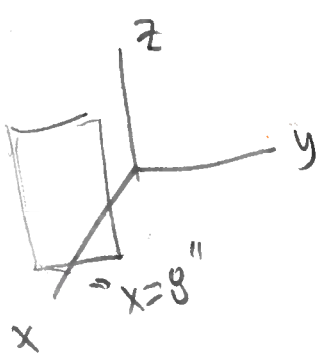
$8x+b$

$2 = f(-1) = (-1)(8)+b$

$10=b$

$f(x)=8x+10$

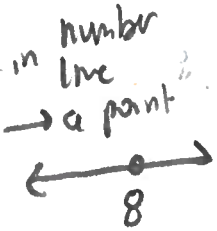




$f(x)=ax+b$

not a function ~ express as $x=8$

'interpret in number line → a point'



interpret as a line