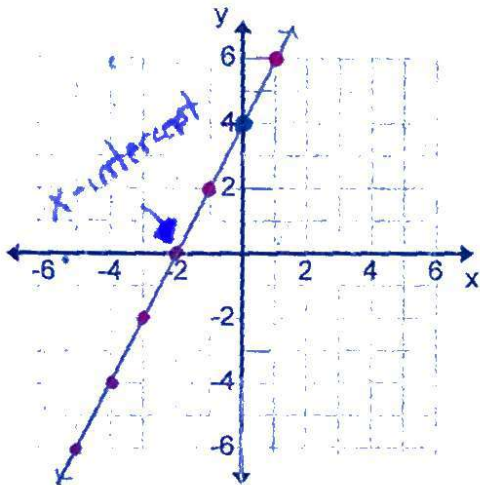


Notes Verbal Descriptions and Applications

- 1) A linear function f models a relationship in which the **dependent variable decreases 6 units for every 3 units the independent variable decreases**. The value of the function at 0 is 4. Graph the function. Identify the slope, y -intercept and x -intercept on the graph. $\uparrow x=0, y=4$



$$\text{slope: } \frac{\Delta y}{\Delta x} = \frac{-6}{-3} = \frac{2}{1} \rightarrow$$

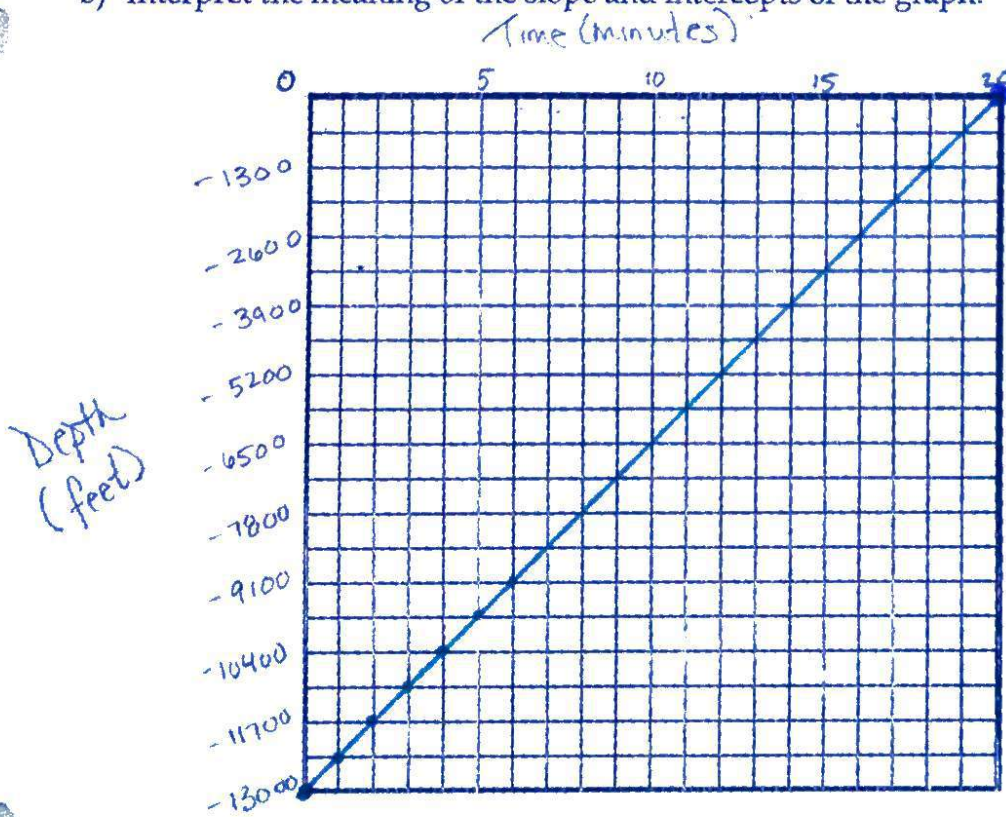
$$y\text{-intercept: } (0, 4)$$

$$x\text{-intercept: } (-2, 0)$$

$$\text{equation of the Line: } y = 2x + 4$$

- 2) A submersible that is exploring the ocean floor begins to ascend to the surface. The elevation h (in feet) of the submersible is modeled by the function $h(t) = 650t - 13,000$, where t is the time (in minutes) since the submersible began to ascend.

- Graph the function and identify its domain and range.
- Interpret the meaning of the slope and intercepts of the graph.



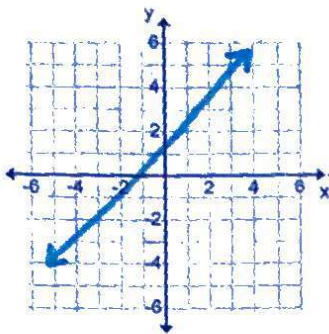
slope: $\frac{650\text{ft}}{1\text{min}}$
ascending 650ft
every minute

y-intercept $(0, -13000)$
starting depth

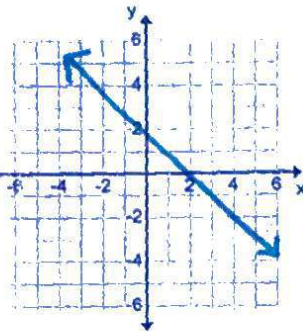
x-intercept $(20, 0)$ ★
took 20 minutes
for submarine to
reach the surface

Types of Slope

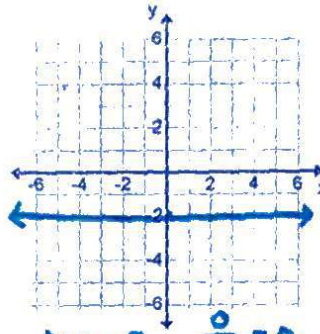
Positive Slope



Negative Slope



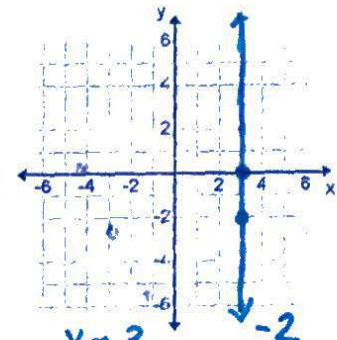
Slope of 0



$$y = -2 \quad \frac{0}{2} = 0$$

$$y = -2$$

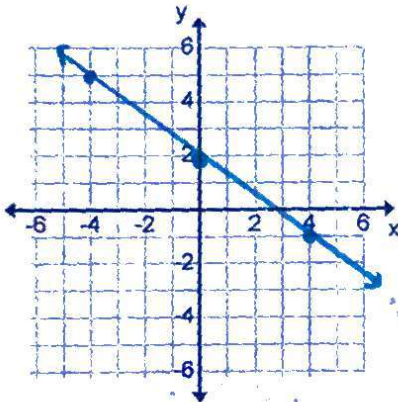
Undefined Slope



$$x = 3 \quad \frac{-2}{0}$$

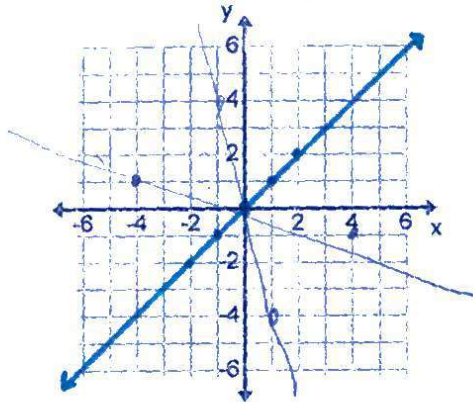
Graph the following lines.

$$y = -\frac{3}{4}x + 2 \quad \frac{-3}{4}$$



$$y = x \quad m = 1$$

$$b = 0$$



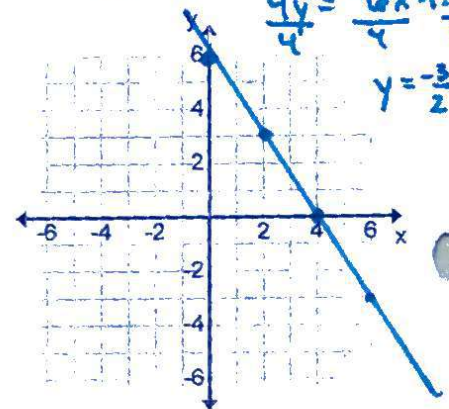
$$6x + 4y = 24$$

$$-6x$$

$$4y = -6x + 24$$

$$\frac{4y}{4} = \frac{-6x + 24}{4}$$

$$y = -\frac{3}{2}x + 6$$



Find the slope.

1) 1

x	1	2	3	4
y	-2	-2	-2	-2

$\frac{0}{1} = 0$

2)

x	-4	-1	3	5
y	15	3	-13	-21

$\frac{\Delta y}{\Delta x} = \frac{-12}{3} = \frac{-16}{4} = \frac{-8}{2} \Rightarrow \frac{-4}{1}$

3) (-2, 3) and (-2, 5)

$$\frac{5-3}{-2-(-2)} = \frac{2}{0} \text{ Undefined}$$

4) (3, -5) and (-3, 5)

$$\frac{5-(-5)}{-3-3} = \frac{10}{-6} = -\frac{5}{3}$$

5) $10x - 15y = 45$

$$-15y = -10x + 45$$

$$y = \frac{2}{3}x - 3$$

6) Write the equation of the line in slope - intercept form with a slope of $\frac{1}{3}$ and a y - intercept of -1.

$$y = \frac{1}{3}x - 1$$