

1.2.

Parallel Lines

Same Slope

Different y intercept

$$x + y = 8$$

Write an equation of a line
that goes through $(-5, 4)$
parallel to given line.

$$x + y = 8$$

Find
slope
of original
line

$$y = -x + 8$$

$$m = -1$$

Use $(-5, 4)$
and $m = -1$
Substitute
Solve for b

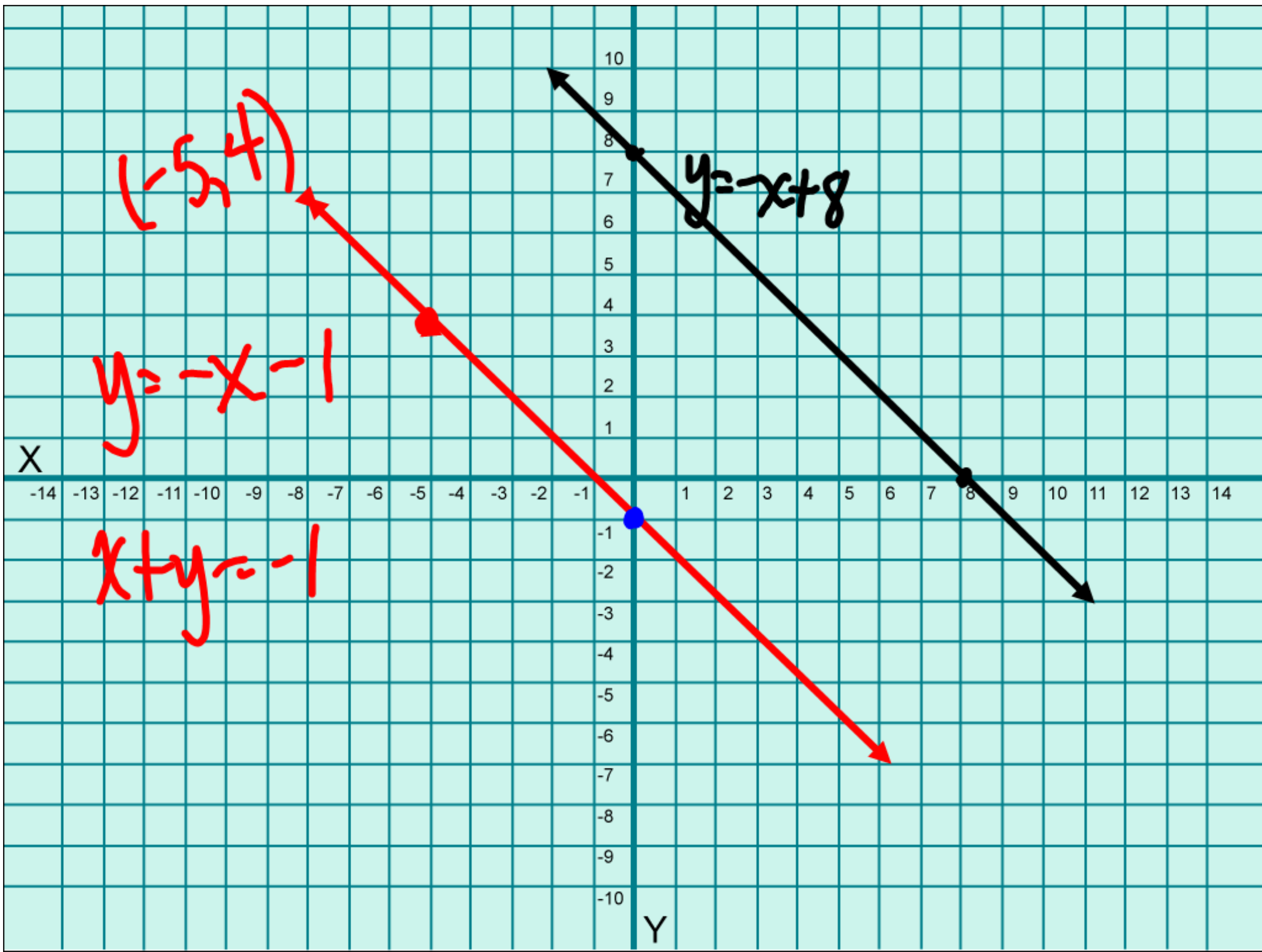
$$y = mx + b$$

$$4 = -1(-5) + b$$

$$4 = 5 + b$$

$$-1 = b$$

$$y = -x - 1$$



Perpendicular Lines

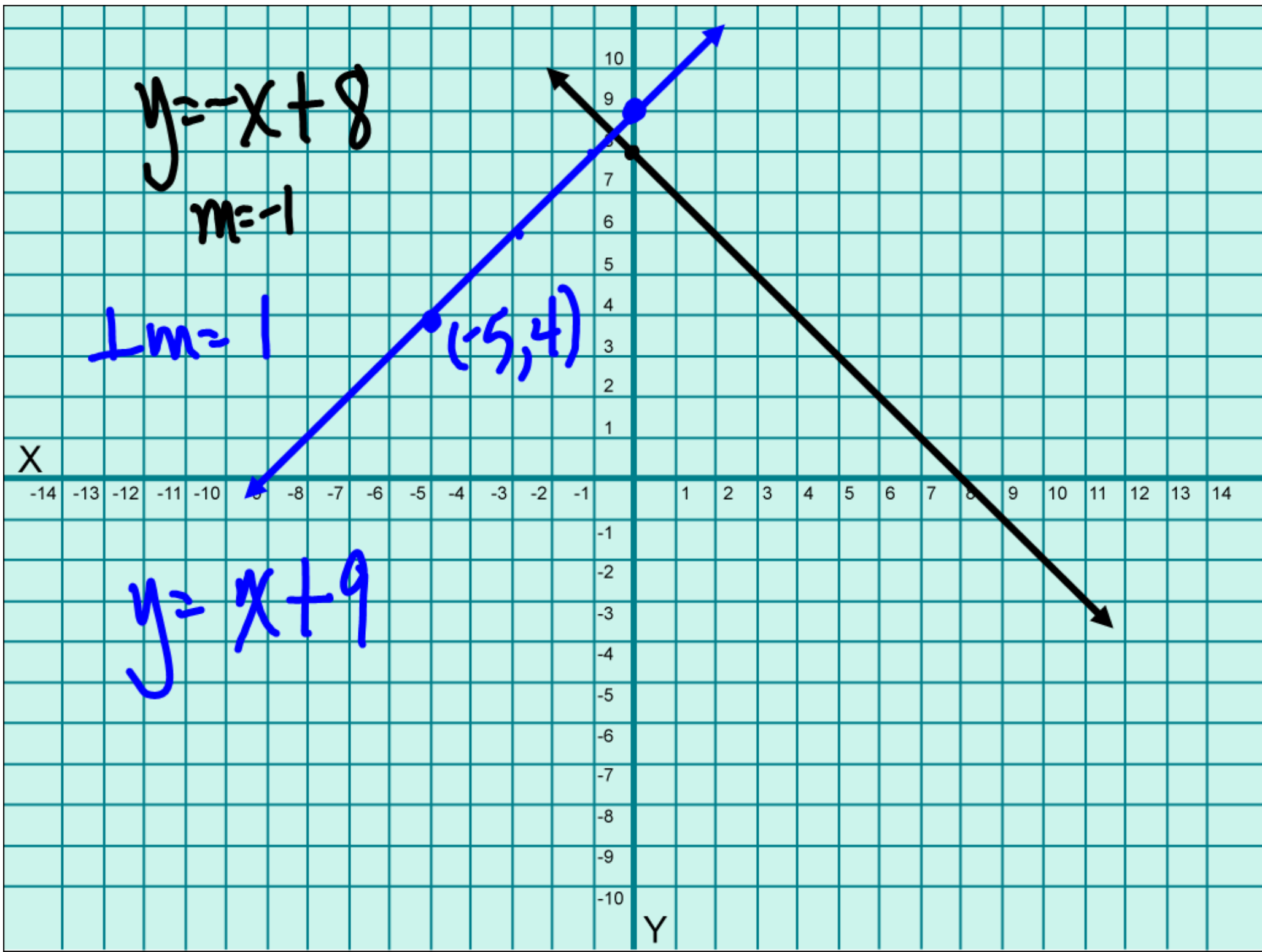
Slope Reciprocal
Opposite sign

$$m = 2$$

$$\perp m = -\frac{1}{2}$$

$$m = -\frac{3}{4}$$

$$\perp m = \frac{4}{3}$$



$$y = -x + 8$$
$$m = -1$$

$$Lm = 1$$

$(-5, 4)$

$$y = x + 9$$

X

Y

$$y = -x + 8 \quad \text{Given Line}$$

⊥ to given line goes through

$$(-5, 4)$$

$$y = -x + 8$$

$$m = -1$$

Slope of given line

$$\perp m = 1$$

New Line

$$(-5, 4)$$

$$y = mx + b$$

$$4 = 1(-5) + b$$

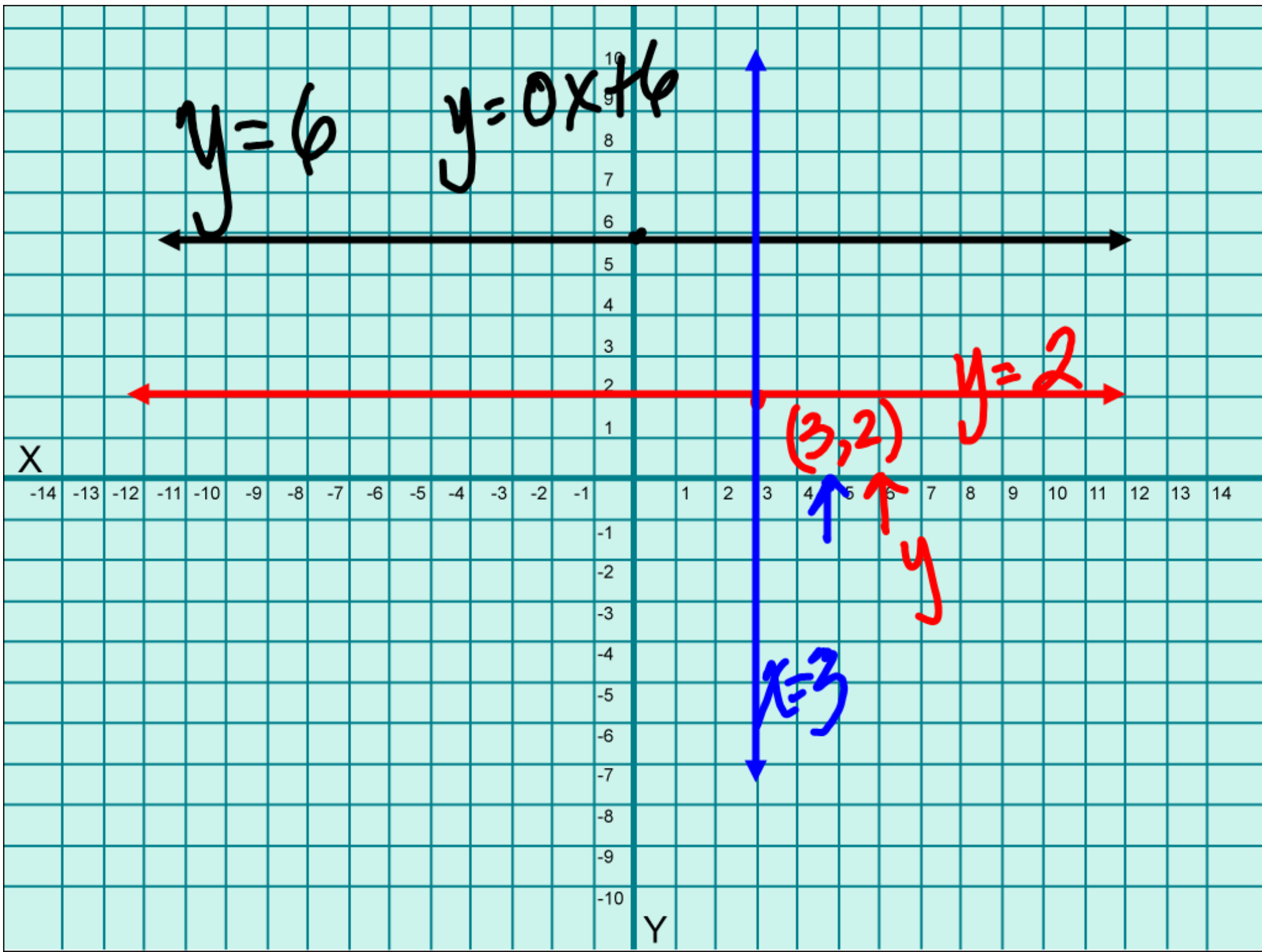
$$4 = -5 + b$$

$$9 = b$$

Write equation

$$y = 1x + 9$$

$$y = x + 9$$



$y = 6$ $y = 0x + 6$

X

Y

(3, 2)

$y = 2$

$x = 3$

y

Point Slope

$$y - y_1 = m(x - x_1)$$

(3, 5)

$$y - 5 = 2(x - 3)$$

m = 2

$$y - 5 = 2x - 6 + 5$$

$$y = 2x - 1$$

Standard Form

x's y's
on left
constant on
right

No fractions
Leading coefficient
is positive

$$Ax + By = C$$

$$-2x \quad y \quad -2x$$

$$y = 2x - 1$$

$$\frac{-2x}{-1} + \frac{y}{1} = \frac{1}{-1}$$

$$2x - y = 1$$

A is positive

$$53. \quad \frac{x}{a} + \frac{y}{b} = 1$$

$$x\text{-intercept } (1, 0) \quad (a, 0)$$

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

$$-4 \cdot \frac{x}{1} + \frac{y}{-4} = 1 \cdot -4$$

$$-4x + y = -4$$

$$4x - y = 4$$

$$y = 4x - 4$$

General
Form

$$4x - y - 4 = 0$$