5.5 Parallel and Perpendicular lines
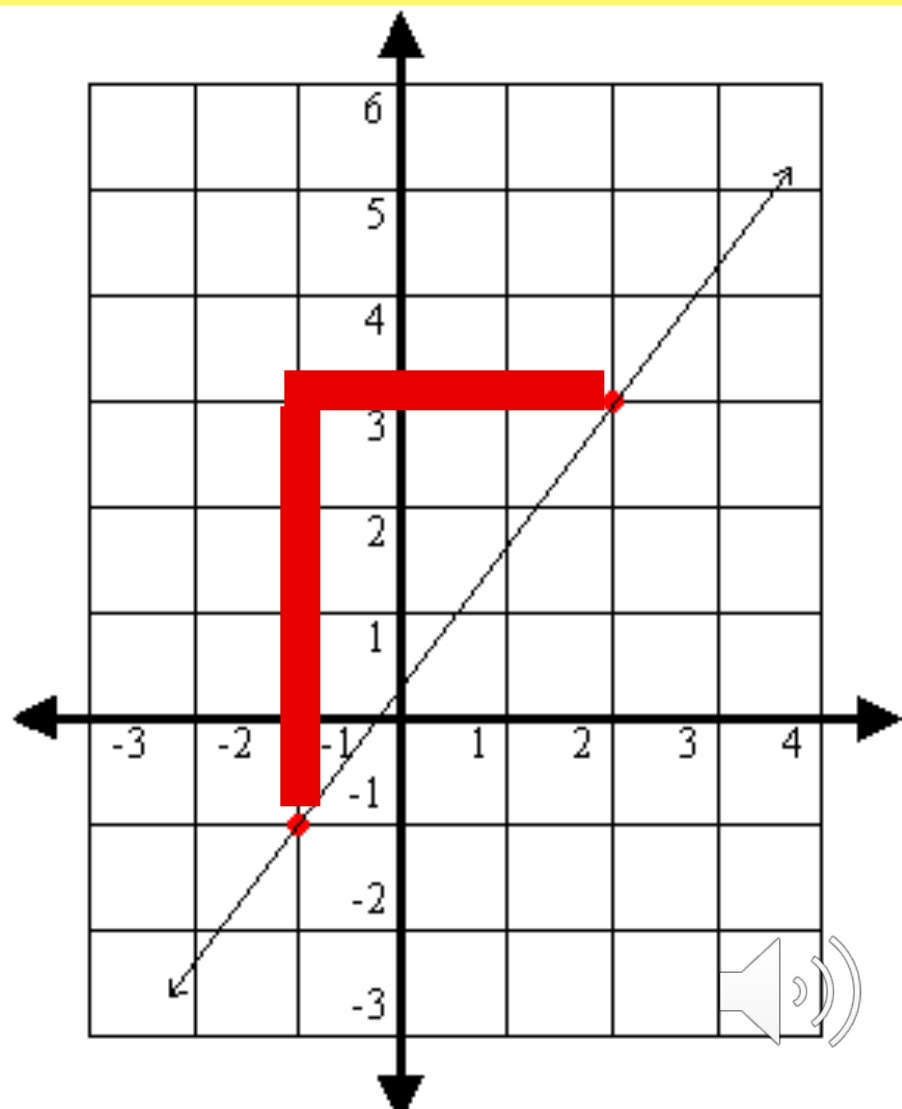
REVIEW Find the slope between points (-1, -1) and (2, 3)

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - -1}{2 - -1}$$

The slope is 4/3

Up 4, right 3

Graph y = 2x – 3

$$y = mx + b$$

$$b = -3$$
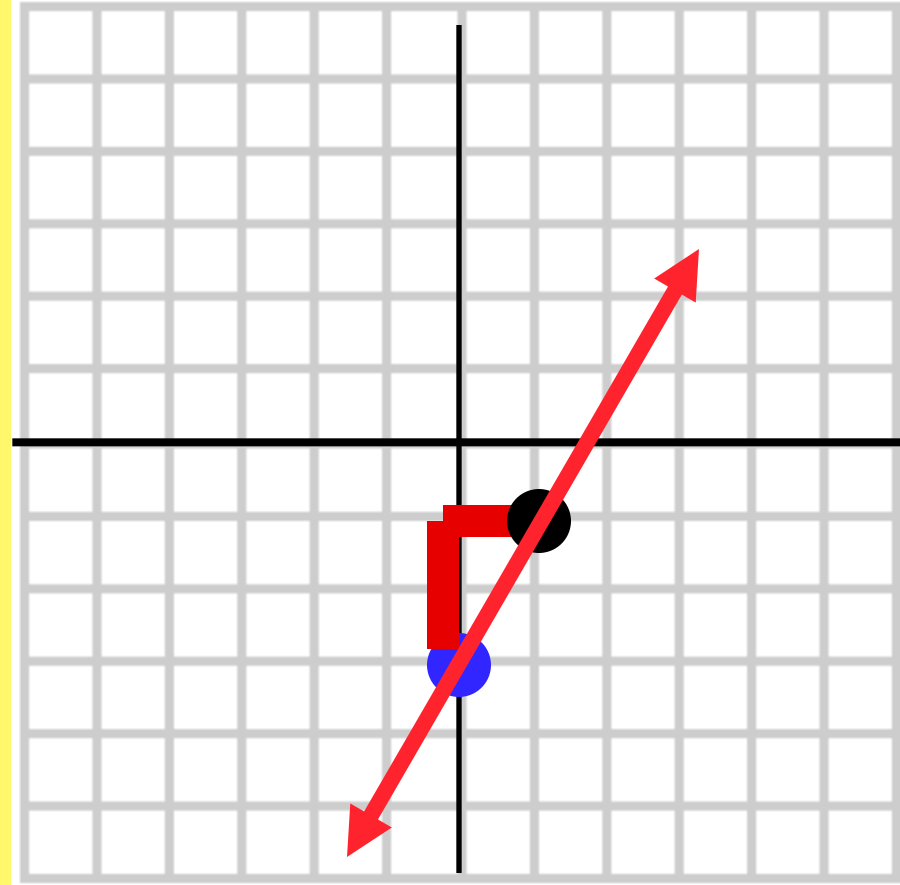
$$m = 2 = \frac{2}{1} = \frac{Change\ in\ y}{Change\ in\ x}$$
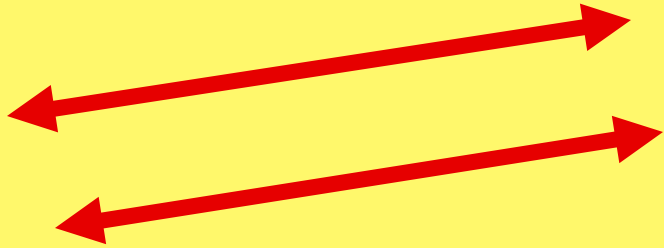
Graph y = 2x – 3

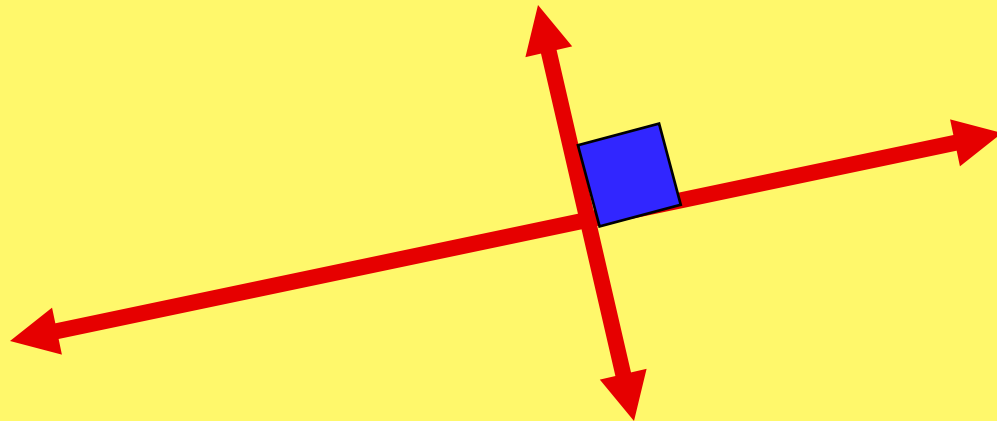b = -3   m = 2

Begin at b = -3.
Move up 2 units
and then right 1
unit

Draw a line through the

How can you tell if equations are parallel?

or perpendicular?

Use your graphing function
On your laptop
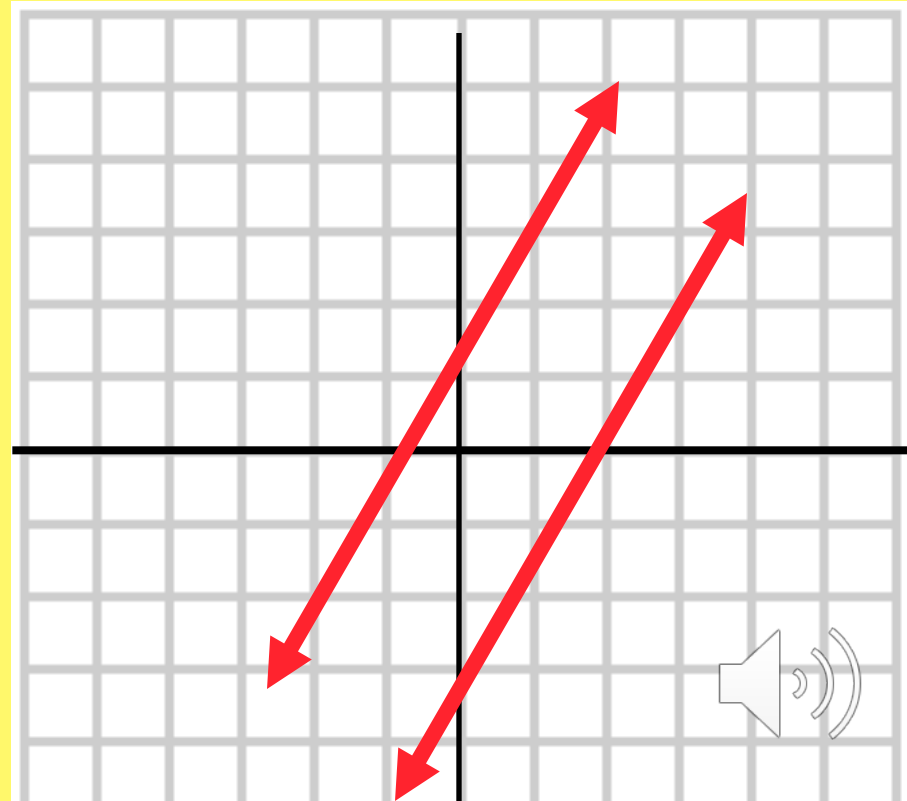Use $\boxed{Y=}$

Enter $y_1 = 2x + 1$

$y_2 = 2x \boxed{-} 3$

Now graph.

Why are the lines parallel ?

Same slope.
m = 2

$$y_1 = \boxed{2}\,x + 1$$
$$y_2 = \boxed{2}\,x - 3$$

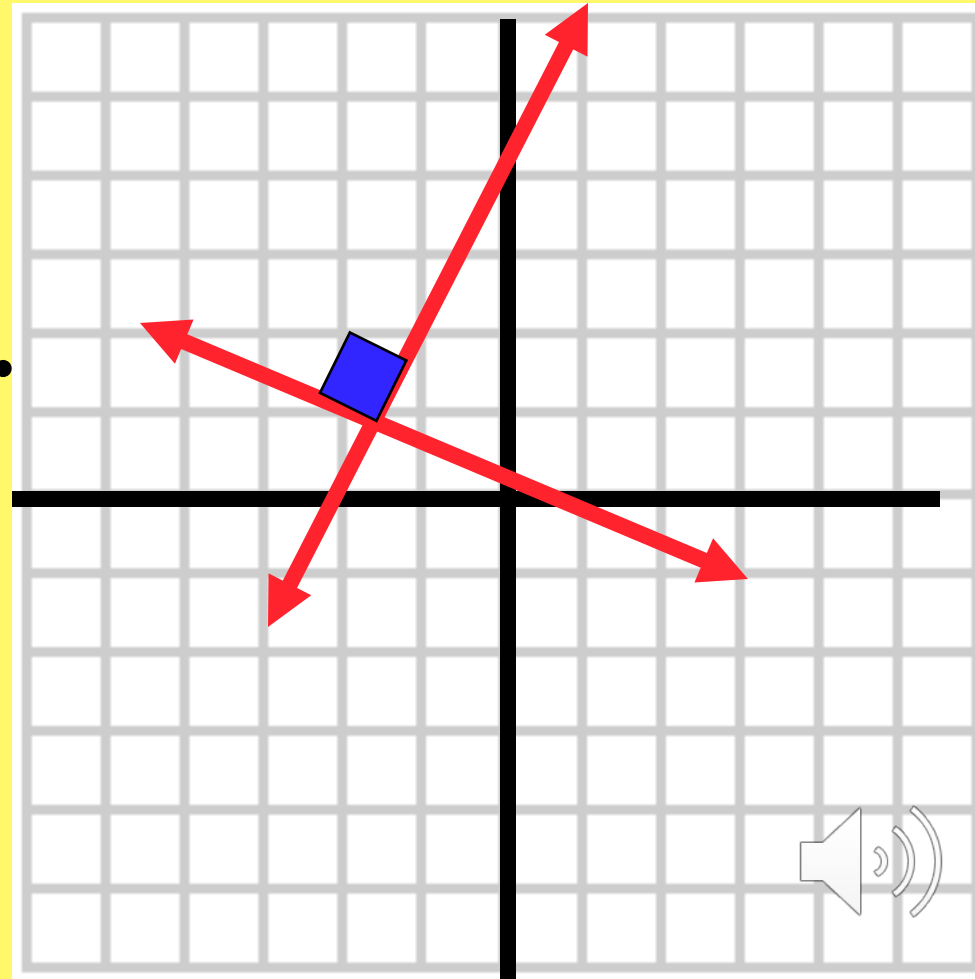Use graphing function

Enter $Y_1 = 2X + 4$

$Y_2 = -(1/2)X$

Slopes are negative reciprocals.

$$Y_1 = 2X + 4$$
$$Y_2 = -(1/2)X$$

Lines are perpendicular.

Parallel lines have same slope.

$y = .2x + 9$

$y = .2x - 3$

Perpendicular lines have slopes that are negative reciprocals.

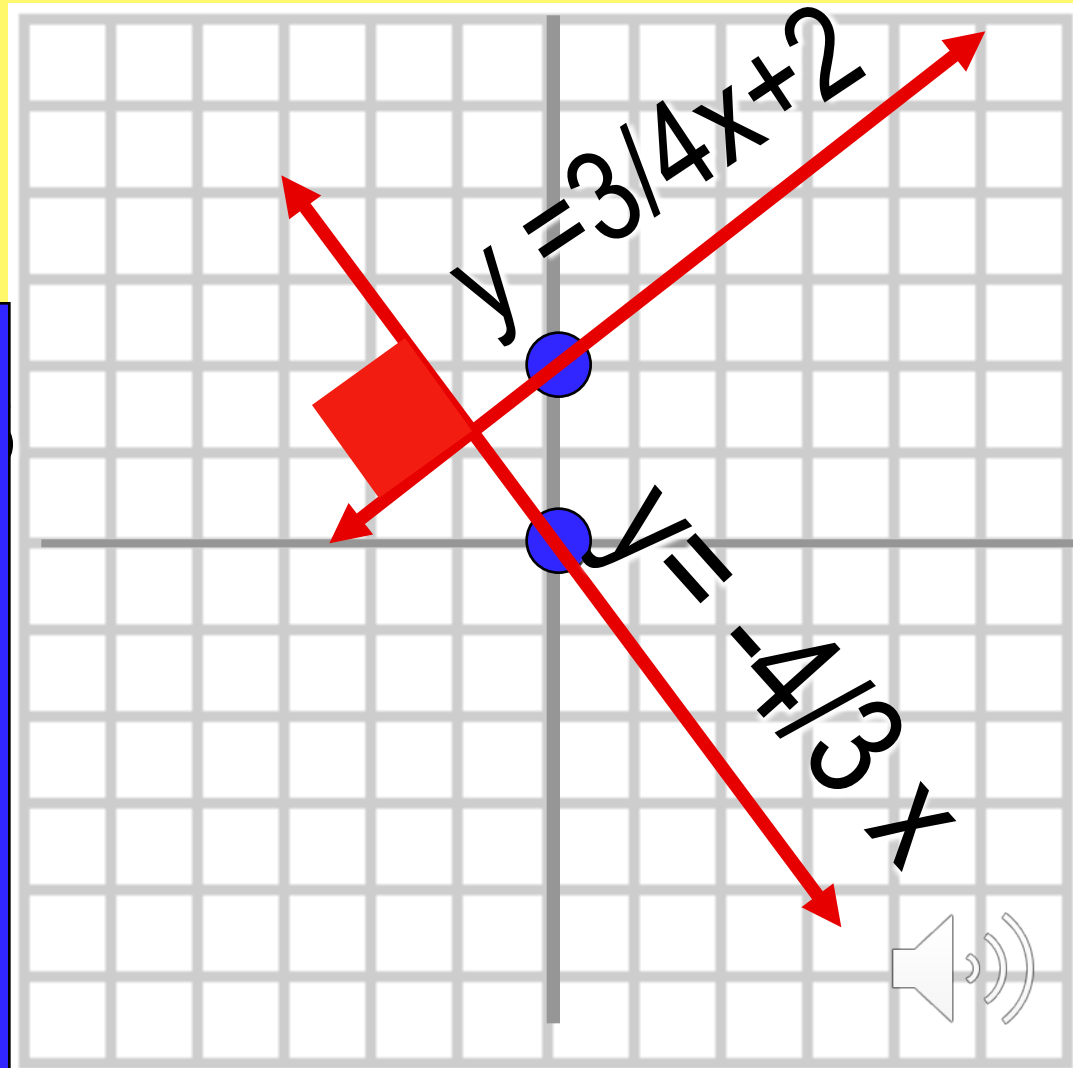$$\frac{3}{4} \qquad \text{-}\frac{4}{3} \qquad\qquad \text{- 6} \qquad \frac{1}{6}$$
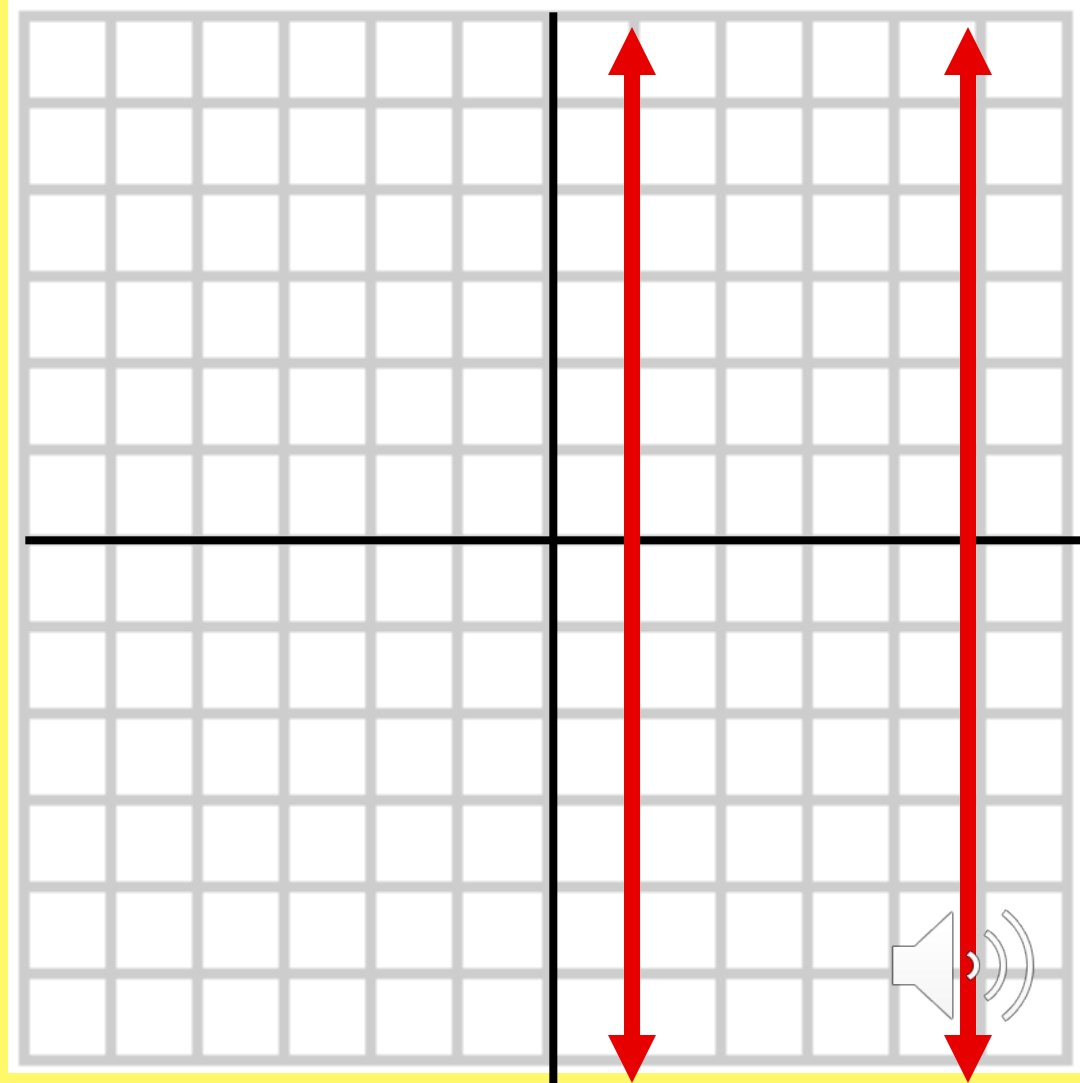
$$y = \boxed{3/4} X + 2$$

$$y = -4/3 X$$

On your caculator use ( ) on fractions

$x = 5$

$x = 1$

Same slope
m is
undefined.

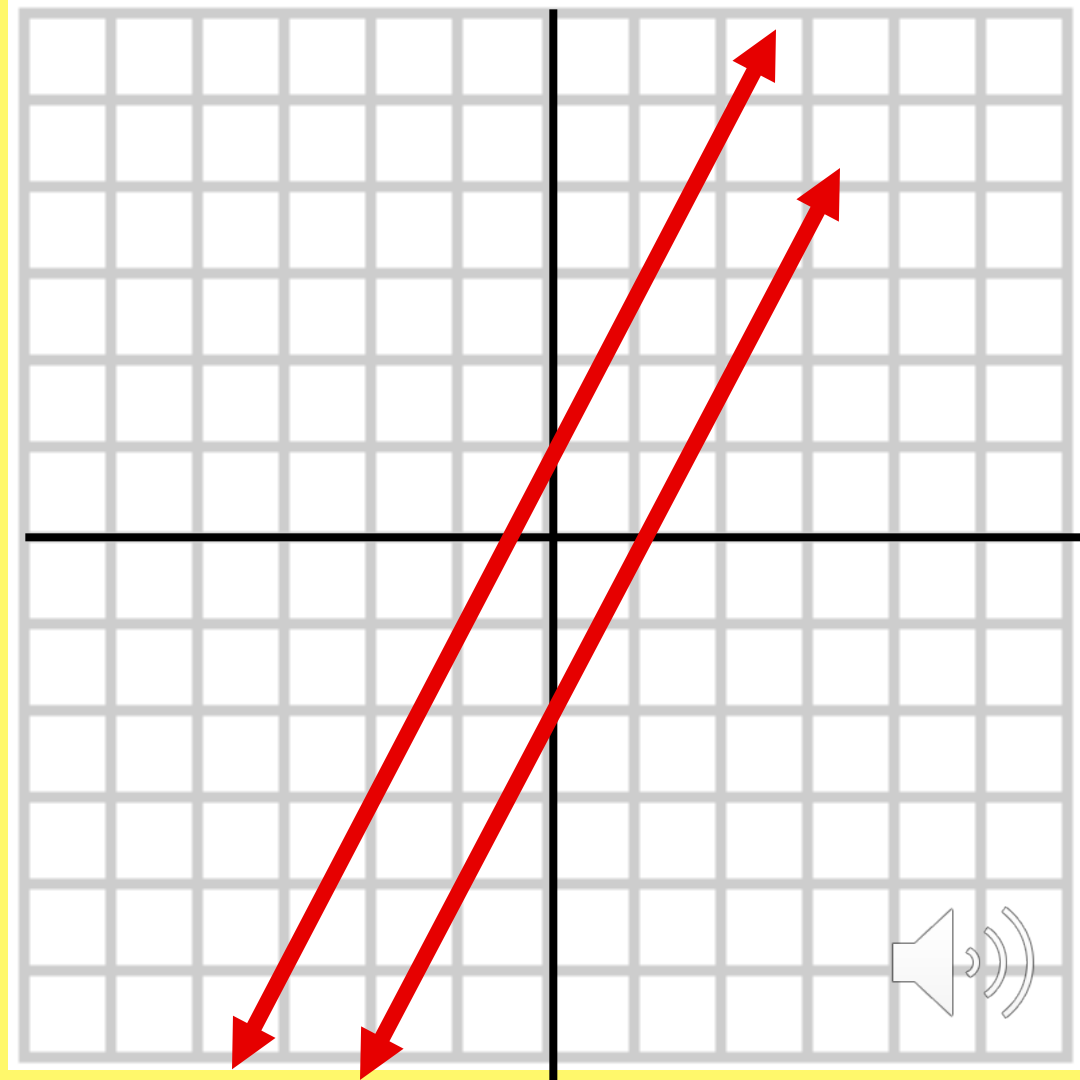# Find a line ll to y = 2x + 1 through (1,0)

$$m = 2$$

$$y = 2x + b$$

$$0 = 2(1) + b$$

$$-2 = b$$

$$y = 2x - 2$$

Find the equation of a line perpendicular to x = 3

$$y = 1$$