

①

Switch from General to functional

$$l_1: 8y - 4x - 32 = 0$$

$$8y = +4x + 32$$

$$\cancel{8}y = \frac{4x}{8} + \frac{32}{8}$$

$$y = \left(\frac{1}{2}x\right) + 4$$

$$l_2: -x + 2y - 14 = 0$$

$$-x - 14 = -2y$$

$$\frac{-x - 14}{-2} = \frac{-2y}{-2}$$

$$y = \left(\frac{1}{2}x\right) + 7$$

Same slope \therefore Parallel

Different y-intercepts \therefore Distinct

Answer: Parallel and distinct lines

②

$$3y = 2x + 6 \rightarrow \text{must put to functional form}$$

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

$$l_1: y = \frac{2}{3}x + 2$$

Find rule of a line that is parallel to equation above

$$y = ax + b \rightarrow \text{Parallel lines} = \text{same slope} \therefore \text{slope of } l_1 = \text{slope of } l_2$$

$$y = \frac{2}{3}x + b$$

Plug in coordinates $(1, 4)$
x y

$$4 = \frac{2}{3}(1) + b$$

$$4 = \frac{2}{3} + b$$

$$4 - \frac{2}{3} = b$$

$$(3)\frac{4}{3} - \frac{2}{3} \rightarrow \text{find common denominator}$$

$$\frac{12}{3} - \frac{2}{3} = \frac{10}{3}$$

$$\frac{10}{3} = b$$

$$\text{Rwe: } y = \frac{2}{3}x + \frac{10}{3} \quad \text{OR} \quad y = \frac{2}{3}x + 3.\overline{333}$$

③ Line 1 $(x_1, y_1) (50, 26)$ $(x_2, y_2) (-6, -30)$

$$\text{Slope } = a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-30 - 26}{-6 - 50} = \frac{-56}{-56} = 1$$

$y = 1x + b$ → Plug in coordinates.

$$26 = 1(50) + b$$

$$26 = \textcircled{50} + b$$

$$26 - 50 = b$$

$$-24 = b$$

$$\therefore \textcircled{l_1 = y = x - 24}$$

Line 2 Slope = 2, X-intercept = 12

$$y = ax + b$$

↳ $y = 0$

$$0 = 2(12) + b$$

$$0 = \textcircled{24} + b$$

$$0 - 24 = b$$

$$-24 = b$$

$$\therefore \textcircled{l_2 = y = 2x - 24}$$

Line 3 X-intercept = 8, Y-intercept = -24

↳ $y = 0$

↳ "B" Value

$$y = ax + b$$

$$0 = a(8) \textcircled{-24}$$

$$0 + 24 = a8$$

$$\frac{+24}{8} = \frac{a8}{8}$$

$$+3 = a$$

$$\textcircled{l_3 = y = 3x - 24}$$

line 10 $(\overset{x_1}{-2}, \overset{y_1}{-44})$ $(\overset{x_2}{3}, \overset{y_2}{6})$

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6 - (-44)}{3 - (-2)} = \frac{50}{5} = 10$$

$$y = 10x + b$$

$$-44 = 10(-2) + b$$

$$-44 = (-20) + b$$

$$-44 + 20 = b$$

$$-24 = b$$

i. $y = 10x - 24$

11: $y = x - 24$

12: $y = 2x - 24$

13: $y = 3x - 24$

14: ?

⋮

110: $y = 10x - 24$

pattern $1x, 2x, 3x, 4x, \dots$
 -24 always as y-intercept

∴ $y = 4x - 24$