

Solve
for y
"b"

$$1. \quad \frac{2a - 3b = -1}{-2a \quad -2a}$$

$$5a - 7.5b = -2.5$$

$$\frac{-5a}{-5a}$$

$$\frac{-3b}{-3} = \frac{-2a - 1}{-3}$$

$$\frac{-7.5b}{-7.5} = \frac{-5a - 2.5}{-7.5}$$

$$b = \frac{2}{3}a + \frac{1}{3}$$

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Same line \rightarrow infinitely many

$$\frac{5}{7.5} \times \frac{10}{10} = \frac{50}{75} = \frac{2}{3}$$

Consistent & dependent

$$4. \quad \begin{array}{l} y = -3x - 8 \\ y = -3x + 8 \end{array} \Rightarrow$$

parallel lines
(no solution)
inconsistent

$$5. \begin{cases} 3x + 8y = 14 \\ \frac{3}{2}x + 4y = 7 \end{cases} \rightarrow \begin{array}{r} 3x + 8y = 14 \\ -3x - 8y = -14 \\ \hline 0x + 0y = 0 \\ 0 = 0 \\ \text{True} \end{array}$$

$-\frac{2}{1} \cdot \frac{3}{2}$ infinitely many solutions

$$6. \begin{cases} 3x + 7y = 5 \\ 3x + 7y = 5 \end{cases} \rightarrow \begin{array}{r} 3x + 7y = 5 \\ 3x + 7y = 5 \\ \hline 0x + 0y = 0 \\ 0 = 0 \\ \text{True} \end{array}$$

$3y = -2x \rightarrow 3 \cdot 2 = -2x$ *

$$\begin{array}{r} 3y = -2x \\ +2x \quad +2x \\ \hline 3y + 2x = 0 \end{array} \rightarrow \begin{array}{r} 3 \cdot 2 = -2x \\ \frac{6}{-2} = \frac{-2x}{-2} \\ -3 = x \end{array}$$

$$\begin{cases} 3(2x + 3y = 0) \rightarrow 6x + 9y = 0 \\ -2(3x + 7y = 5) \rightarrow -6x - 14y = -10 \\ \hline 0x - 5y = -10 \\ -5y = -10 \\ \frac{-5y}{-5} = \frac{-10}{-5} \\ y = 2 \end{cases}$$

$(-3, 2)$
consistent & independent