Forms of Linear Equations

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What are the Forms of Linear Equations?

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Linear Equations can be written in two forms:

- Standard Form: $Ax + By = C$, where $A > 0$, $B \neq 0$, and A, B, C are integers
- Slope-Intercept Form: $y = mx + b$, where m is the slope, b is the y-intercept, and m, b are real numbers

Example 1

Rewrite the equation $y = 5x + 7$ in the form $Ax + By = C$.

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$$y = 5x + 7$$

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$$-5x + y =$$

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$5x$

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$5x - y = -7$ Distributive Property

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$-1(-5x + y) = -1(7)$ MPE

$5x - y = -7$ Distributive Property

$A = 5, B = -1, C = -7$

Example 2

Rewrite the equation $y = \frac{5}{3}x + \frac{7}{2}$ in the form $Ax + By = C$.

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Subtraction Property

Find the LCM:

$3 \quad =$

Example 2

$$y = \frac{5}{3}x + \frac{7}{2}$$

$$-\frac{5}{3}x + y = \frac{7}{2}$$

Subtraction Property

Find the LCM:

$$3 \quad = \quad 3$$

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$$y = \frac{5}{3}x + \frac{7}{2}$$

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Subtraction Property

Find the LCM:

$$3 = 3$$

$$2 =$$

Example 2

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$$-\frac{5}{3}x + y = \frac{7}{2}$$ Subtraction Property

Find the LCM:

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$$2 = 2$$

Example 2

$$y = \frac{5}{3}x + \frac{7}{2}$$

$$-\frac{5}{3}x + y = \frac{7}{2}$$ Subtraction Property

Find the LCM:

$$\begin{array}{rcl} 3 & = & 3 \\ 2 & = & 2 \\ \hline \text{LCM} & = & \end{array}$$

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$$y = \frac{5}{3}x + \frac{7}{2}$$

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$$-\frac{5}{3}x + y = \frac{7}{2}$$ Subtraction Property

Find the LCM:

$$\begin{array}{rcl} 3 & = & 3 \\ 2 & = & 2 \\ \hline \text{LCM} & = & (3)\ (2) = 6 \end{array}$$

Example 2

$$y = \frac{5}{3}x + \frac{7}{2}$$

$$-\frac{5}{3}x + y = \frac{7}{2} \qquad \text{Subtraction Property}$$

$$-6(-\frac{5}{3}x + y) =$$

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$$10x - 6y$$

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$$10x - 6y = -21 \qquad \text{Distributive Property}$$

$$A = 10, B = -6, C = -21$$

Example 3

Rewrite the equation $3x + \frac{1}{2}y = 4$ in the form $y = mx + b$.

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$$3x + \frac{1}{2}y = 4$$

$$\frac{1}{2}y = -3x + 4 \qquad \text{Subtraction Property}$$

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

Example 3

$$3x + \frac{1}{2}y = 4$$

$$\frac{1}{2}y = -3x + 4 \qquad \text{Subtraction Property}$$

$$2\left(\frac{1}{2}y\right) = 2(-3x + 4)$$

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$$y = -6x + 8 \qquad \text{Distributive Property}$$

$$m = -6, b = 8$$

Example 4

Rewrite the equation $\frac{3}{2}x + 3y - 2 = 0$ in the form $y = mx + b$.

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$$\frac{3}{2}x + 3y - 2 = 0$$

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$$\frac{3}{2}x + 3y - 2 = 0$$

$$3y =$$

Example 4

$$\frac{3}{2}x + 3y - 2 = 0$$

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

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$$\frac{3}{2}x + 3y - 2 = 0$$

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$$\frac{3}{2}x + 3y - 2 = 0$$

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$$\frac{1}{3}(3y) =$$

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$$\frac{1}{3}(3y) = \frac{1}{3}\left(-\frac{3}{2}x + 2\right)$$

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$$\frac{3}{2}x + 3y - 2 = 0$$

$$3y = -\frac{3}{2}x + 2 \qquad \text{Subtraction Property}$$

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$$y =$$

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$$y = -\frac{1}{2}x + \frac{2}{3}$$

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$$y = -\frac{1}{2}x + \frac{2}{3} \qquad \text{Distributive Property}$$

$$m = -\frac{1}{2}, b = \frac{2}{3}$$

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Thank you for watching.