

Solutions

Nov 20-18:35

1. Simplify each expression.

a) $3(x + y) - 5(x - y)$

$$= 3x + 3y - 5x + 5y$$

$$= -2x + 8y$$

c) $\frac{1}{2}(x^2 + 1) - \frac{3}{2}(x^2 - 1)$

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

$$= -\frac{2}{2}x^2 + \frac{4}{2}$$

$$= -x^2 + 2$$

b) $(4x - y)(4x + y)$

$$= 16x^2 - 4xy + 4xy - y^2$$

$$= 16x^2 - y^2$$

d) $4x(x + 2) - 2x(x - 4)$

$$= 4x^2 + 8x - 2x^2 + 8x$$

$$= 2x^2 + 16x$$

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2. Evaluate each expression in question 1 when $x = 3$ and $y = -5$.

a) $3(x + y) - 5(x - y)$

$$\begin{aligned} &\Rightarrow -2x + 8y \\ &= -2(3) + 8(-5) \\ &= -6 + (-40) \\ &= -46 \end{aligned}$$

b) $(4x - y)(4x + y)$

$$\begin{aligned} &\Rightarrow 16x^2 - y^2 \\ &= 16(3)^2 - (-5)^2 \\ &= 16(9) - (25) \\ &= 144 - 25 \\ &= 119 \end{aligned}$$

c) $\frac{1}{2}(x^2 + 1) - \frac{3}{2}(x^2 - 1)$

$$\begin{aligned} &\Rightarrow -x^2 + 2 \\ &= -(3)^2 + 2 \\ &= -9 + 2 \\ &= -7 \end{aligned}$$

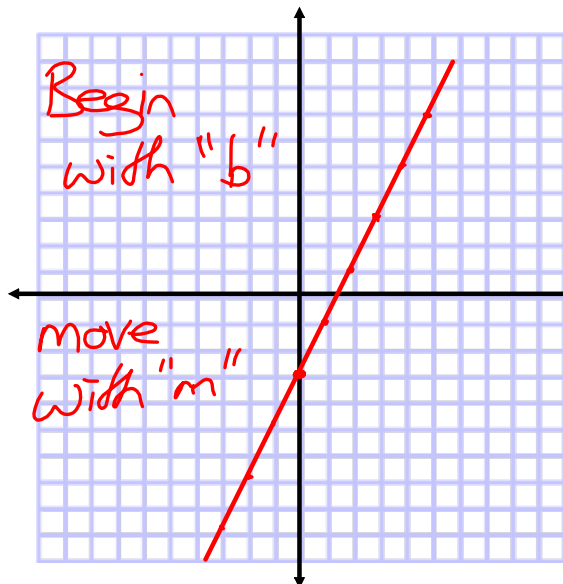
d) $4x(x + 2) - 2x(x - 4)$

$$\begin{aligned} &\Rightarrow 2x^2 + 16x \\ &= 2(3)^2 + 16(3) \\ &= 2(9) + 48 \\ &= 18 + 48 \\ &= 66 \end{aligned}$$

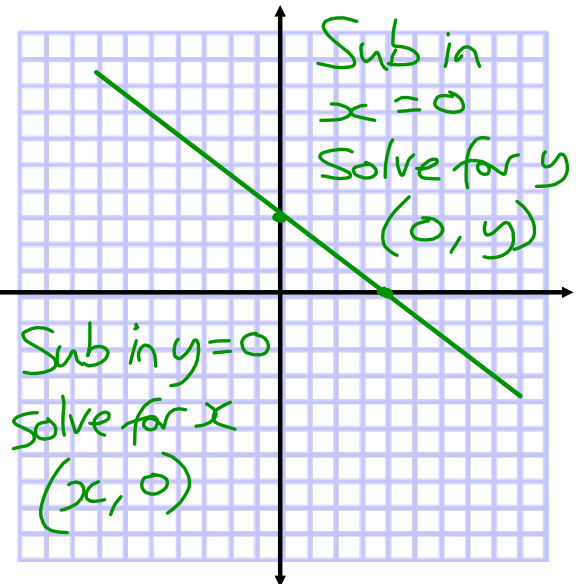
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4. Graph each linear relation.

a) $y = 2x - 3$



b) $3x + 4y = 12$



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2. Expand, where necessary, and then simplify.

a) $(2x + 3) + (7x - 5)$

$$= 2x + 3 + 7x - 5$$

$$= 9x - 2$$

b) $(4x^2 - 7x + 1) - (2x^2 - 3x + 10)$

$$= 4x^2 - 7x + 1 - 2x^2 + 3x - 10$$

$$= 2x^2 - 4x - 9$$

c) $(2x - 3)(4x + 5)$

$$= 8x^2 - 12x + 10x - 15$$

$$= 8x^2 - 2x - 15$$

d) $(2x - 1)^2$

$$= (2x - 1)(2x - 1)$$

$$= 4x^2 - 2x - 2x + 1$$

$$= 4x^2 - 4x + 1$$

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6. Simplify.

a) $\left(\frac{2x^2}{3}\right)\left(\frac{5x^3}{4}\right)$

$$= \frac{10x^5}{12}$$

$$= \frac{5x^5}{6}$$

c) $(2x^2y^3)(4xy^2)$

$$= 8x^3y^5$$

b) $\left(\frac{3x}{2}\right) \div \left(\frac{x^3}{5}\right)$

$$= \frac{3x}{2} \times \frac{5}{x^3}$$

$$= \frac{15x}{2x^3}$$

$$= \frac{15}{2x^2}$$

d) $(25x^5y^3) \div (5x^2y)$

$$= 25x^5y^3 \times \frac{1}{5x^2y}$$

$$= \frac{25x^5y^3}{5x^2y}$$

$$= 5x^3y^2$$

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