Lesson Title 7.5 Solving Equations with Rational Expressions DAY THREE NOTES B2A2 Date _____

OBJECTIVE 2: Solving Equations for a Specified Variable

These are called "literal equations" used most often in science class when you have to solve a formula for a different variable than it is normally set equal to.

Use inverse operations and SADMEP to get everything away from the variable you are solving for.

TASK 1: Solve the formula or equation for the indicated variable.

a) $y = mx + b$, *for b*

$-mx \quad -mx$

$y - mx = b$

b) $\frac{1}{a} + \frac{1}{b} = \frac{1}{x}$, for b

$abx \cdot \frac{1}{b} = \left(\frac{1}{x} - \frac{1}{a}\right) abx$

$ax = ab - bx$

$\frac{ax}{(a-x)} = \frac{b(a-x)}{(a-x)}$

$b = \frac{ax}{(a-x)}$

c) $A = \frac{1}{2}bh$, for b

$\frac{2A}{h} = \frac{bh}{h}$

$b = \frac{2A}{h}$

TASK 2: Write each phrase as an expression. "Turn the words into numbers and variables!"

a) The reciprocal of 3

$\frac{1}{3}$

b) The reciprocal of y subtracted from the reciprocal of 12

$\frac{1}{12} - \frac{1}{y}$

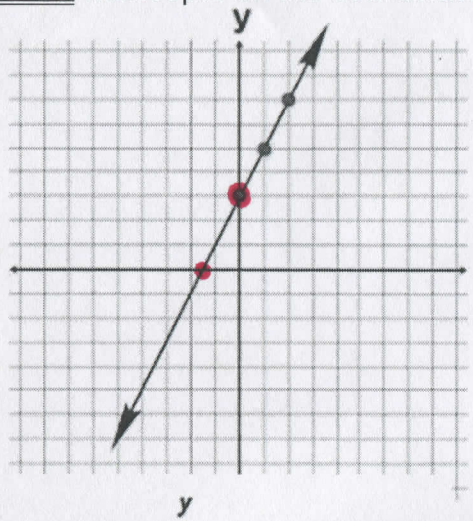
TASK 3: Setting up proportions to solve for missing information.

If a 5 gallon jug is filled in 7 hours by a dripping faucet, what fractional part of the ~~tank~~ jug is filled in half an hour?

$\frac{\text{gallons}}{\text{time}} = \frac{5}{7} = \frac{x}{0.5} \rightarrow \frac{5(0.5)}{7} = \frac{7x}{7} \rightarrow x = \frac{5(\frac{1}{2})}{7} = \frac{\frac{5}{2}}{\frac{7}{1}} = \frac{5}{2} \cdot \frac{1}{7} = \frac{5}{14}$

TASK 4: Intercepts on the coordinate plane in coordinate form. (approximate if necessary)

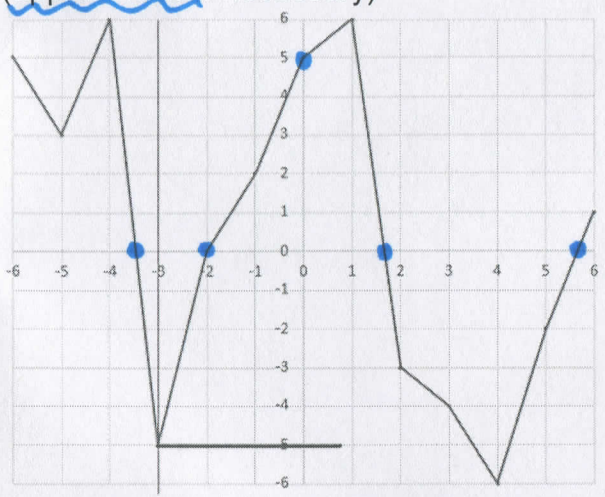
a)



$x: (-\frac{3}{2}, 0)$

$y: (0, 3)$

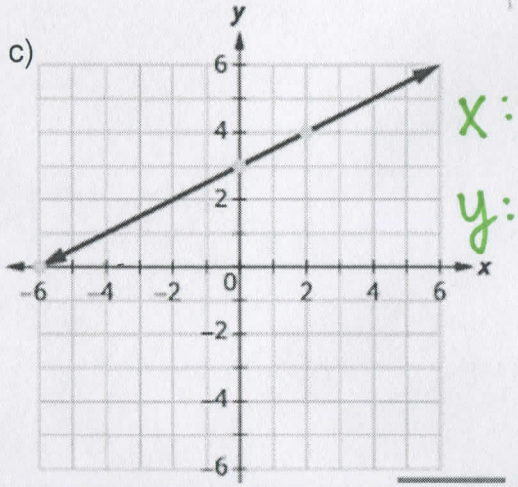
b)



$x: (-3.5, 0); (-2, 0); (5.75, 0)$
$(1.75, 0)$

$y: (0, 5)$

c)



$x: (-6, 0)$

$y: (0, 3)$

Common Mistakes:

Still need help with: