Foundations of Algebra Unit 4: Equations & Inequalities Notes

Day 5 – Isolating a Variable (Complex)

One of the most important skills you will encounter for the next two units is the ability to take an equation in standard form (Ax + By = C) and solve for y. You had a few problems from yesterday like this, but take some time to practice a few more.

a. $5x - 2y = 8$

$-5x \quad -5x$

$\frac{-2y}{-2} = \frac{8 - 5x}{-2}$

$y = \frac{8 - 5x}{-2}$

$y = \frac{8}{-2} - \frac{5}{-2}x$

$y = -4 + 2.5x$

b. $-3x + 3y = 6$

$+3x \quad +3x$

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

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

$y = 2 + 1x$

OR

$y = 2 + x$

c. $-7x - 4y = 12$

$+7x \quad +7x$

$\frac{-4y}{-4} = \frac{12 + 7x}{-4}$

$y = \frac{12 + 7x}{-4}$

$y = -3 - \frac{7}{4}x$

Complex Literal Equations

a. $\frac{5x+y}{a} = 2$ for a

$5x + y = 2a$

$\frac{5x+y}{2} = a$

b. $c = \frac{3}{4}y + b$ for b

$-\frac{3}{4}y \quad -\frac{3}{4}y$

$c - \frac{3}{4}y = b$

c. $P = \frac{1.2W}{H^2}$ for W

$H^2 \quad H^2$

$\frac{H^2P}{1.2} = \frac{1.2W}{1.2}$

$\frac{H^2P}{1.2} = W$

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d. $p(t + 1) = -2$, for t

$\frac{pt + p}{p} = \frac{-2}{p} \quad -p$

$t = \frac{-2}{p} - p$

$t = \frac{-2}{p} - 1$

$\frac{p(t+1)}{p} = \frac{-2}{p}$

$t + 1 = -\frac{2}{p}$

$-1 \quad -1$

$t = -\frac{2}{p} - 1$

e. $\frac{3ax - n}{5} = 4$ for x

$3ax - n = 20$

$+n \quad +n$

$\frac{3ax}{3a} = \frac{20 + n}{3a}$

$x = \frac{20 + n}{3a}$

f. $\frac{34 - A}{2} = H$ for A

$-34 \quad -34$

$-A = 2H - 34$

$-1 \quad -1$

$A = -2H + 34$