Math 1300 Section 1.6

Section 1.6: Solving Linear Equations

Steps:

1. Distribute if the equation has parentheses 3 & 5 3x, 5x, 1981x
2. Combine any like terms
3. Isolate the variable by doing addition/subtraction before multiplication/division

Examples:

1. Solve for x.

$x - 3 = 12$

$+3 \quad +3$

$x = 15$

2. Solve for x.

$3(x + 2) - 5 = 2(x - 4) + 16$

$3x + 6 - 5 = 2x - 8 + 16$

$3x + 1 = 2x + 8$

$-2x \quad -2x$

$x + 1 = 8$

$-1 \quad -1$

$x = 7$

3. Solve for x.

$-\frac{4}{5}x + 6 = 10$

$-6 \quad -6$

$\left(-\frac{5}{4}\right)\left(-\frac{4}{5}\right)x = \left(-\frac{5}{4}\right)4$

$x = -5$

$-\frac{4}{5}x + 6 = 10 \cdot 5$

$-4x + 30 = 50$

$-30 \quad -30$

$\frac{-4x}{-4} = \frac{20}{-4}$

$x = -5$

4. Solve for c:

$$\frac{1}{5}(4c+10)=\frac{1}{2}(6-2c)$$

LCM = LCD

$2(4c+10)=5(6-2c)$

$8c+20=30-10c$

$+10c \quad +10c$

$18c+20=30$

$-20 \quad -20$

$\frac{18c}{18}=\frac{10}{18}$ → $c=\frac{10}{18}=\frac{5}{9}$

$c=5/9$

5. Solve for x.

$$2x+\frac{x+3}{3}+\frac{x-2}{4}=-\frac{5}{6}$$

LCD = 12

$2x\cdot 12+\frac{x+3}{3}\cdot 12+\frac{x-2}{4}\cdot 12=-\frac{5}{6}\cdot 12$

$24x+(x+3)4+(x-2)3=-10$

$24x+4x+12+3x-6=-10$

$31x+6=-10$

$-6 \quad -6$

$\frac{31x}{31}=\frac{-16}{31}$ → $x=\frac{-16}{31}$

6. Solve for z.

$$W=3u-7z$$

$z=$ ☐

$+7z \quad +7z$

$W+7z=3u$

$-W \quad -W$

$\frac{7z}{7}=\frac{3u-W}{7}$

$\frac{3u}{7}=\frac{3}{7}u$

$\frac{W}{7}=\frac{1}{7}W$

$z=\frac{3u-W}{7}$

$$z = \frac{3}{7}u - \frac{1}{7}w$$

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7. Solve for C.

$$5 \cdot F = \frac{9}{5}C + 32 \cdot 5$$

$$5F = 9C + 160$$
$$-9C \quad -9C$$

$$5F - 9C = 160$$
$$-5F \quad -5F$$

$$\frac{-9C}{-9} = \frac{-5F + 160}{-9}$$

$$C = \frac{5}{9}F - \frac{160}{9}$$