5.7 Continued

January 2

Skills: Solve for x

$-8(x+5) + 2x < 3x - 17$

$-8x - 40 + 2x < 3x - 17$

$-6x - 40 < 3x - 17$

$+6x \quad +6x$

$-40 < 9x - 17$

$+17 \quad +17$

$\frac{-23}{9} < \frac{9x}{9}$

$-2\frac{5}{9}$ or $\frac{-23}{9} \leq x$

Substitution: Solving Systems

Example 1:

$y = 2x - 15$

$y = 5x$

$5x = 2x - 15$

$-2x \quad -2x$

$\frac{3x}{3} = \frac{-15}{3}$

$x = -5$

$y = 5(-5)$

$(-5, -25)$

Example 2:

$y = 6x - 11$

$-2x - 3y = -7$

$-2x - 3(6x - 11) = -7$

$-2x - 18x + 33 = -7$

$-20x + 33 = -7$

$-33 \quad -33$

$\frac{-20x}{-20} = \frac{-40}{-20}$

$x = 2$

$y = 6(2) - 11$

$y = 12 - 11$

$y = 1$

$(2, 1)$

Example 3

$2x - 3y = 7$

$y = x - 1$

$2x - 3(x-1) = -1$

$2x - 3x + 3 = -1$

$-1x + 3 = -1$

$-3 \quad -3$

$\frac{-1x}{-1} = \frac{-4}{-1}$

$x = 4$

$y = 4 - 1$

$y = 3$

$(4, 3)$

Example 4

$y = 4x - 10$

$y = 5 - x$

$5 - x = 4x - 10$

$+x \quad +x$

$5 = 5x - 10$

$+10 \quad +10$

$\frac{15}{5} = \frac{5x}{5}$

$3 = x$

$y = 4(3) - 10$

$y = 12 - 10$

$y = 2$

$(3, 2)$

5.7 Continued

Example 5

$x = -4y$

$x = 4 - 6y$

$4 - 6y = -4y$

$+6y \quad +6y$

$\frac{4}{2} = \frac{2y}{2}$

$2 = y$

Example 7

$-4x + y = 6$

$-10x - 2y = 42$

$-10x - 2(-4x + 6) =$

$-10x + 8x - 12 =$

$-18x - 12 =$

$+12 \quad +12$

$\frac{-18x}{-18} =$

$(-3, -6)$

$-4(3) + y = 6$

$-12 + y = 6$

$y = -6$

Example 9

$x + 4y = 19$

$x - 2y = 1$

$x = 2y + 1$

$2y + 1 + 4y = 19$

$6y + 1 = 19$

$-1 \quad -1$

$\frac{6y}{6} = \frac{18}{6}$

$y = 3$

$(7, 3)$

January 26, 2

5.7 Continued - - -

Example 5

$x = -4y$

$x = 6y - 4$

$6y - 4 = -4y$

$+4y \quad +4y$

$\frac{10y}{10} = \frac{8}{10}$

$y = \frac{4}{5}$

$(-8, 2)$

$x = -4(2)$

$x = -8$

Example 6

$y = -3x + 5$

$5x + 4y = -3$

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

$5x + 12x - 20 = -3$

$17x - 20 = -3$

$+20 \quad +20$

$\frac{17x}{17} = \frac{17}{17}$

$x = 1$

$(1, 2)$

$-3 + 5$

$y = 2$

Example 7

$-4x + y = 6 \quad y = 4x + 6$

$-10x - 2y = 42$

$-10x - 2(4x + 6) = 42$

$-10x - 8x - 12 = 42$

$-18x - 12 = 42$

$+12 \quad +12$

$\frac{-18x}{-18} = \frac{54}{-18}$

$x = -3$

$(-3, -6)$

$-4(-3) + y = 6$

$12 + y = 6$

$y = -6$

Example 8

$-5x + y = -2$

$-3x + 6y = -2$

$-5x + y = -2$

$y = 5x - 2$

$-3x + 6(5x - 2) = -2$

$-3x + 30x - 12 = -2$

$27x - 12 = 10$

$+12 \quad +12$

$\frac{27x}{27} = \frac{0}{27}$

$x = 0$

$(0, -2)$

Example 9

$x + 4y = 19$

$x - 2y = 1 \quad x = 2y + 1$

$2y + 1 + 4y = 19$

$6y + 1 = 19$

$-1 \quad -1$

$\frac{6y}{6} = \frac{18}{6}$

$y = 3$

$(7, 3)$

$x - 2(3) = 1$

$x - 6 = 1$

$x = 7$

Example 10

$-7x - 2y = -13$

$x - 2y = 11 \quad x = 2y + 11$

$-7(2y + 11) - 2y = -13$

$-14y - 77 - 2y = -13$

$-16y - 77 = -13$

$+77 \quad +77$

$\frac{-16y}{-16} = \frac{64}{-16}$

$y = -4$

$(3, -4)$

$x - 2(-4) = 11$

$x + 8 = 11$

$-8 \quad -8$

$x = 3$