4.3

1) $4x + 2y = 0$
$-4x - 9y = -28$
$-\dfrac{7y}{-7} = -\dfrac{28}{-7}$
$y = 4$
$4x + 2(4) = 0$
$4x + 8 = 0$
$\underline{-8 \quad -8}$
$\dfrac{4x}{4} = -\dfrac{8}{4}$
$x = -2$
$(-2, 4)$

3) $-9x + 5y = -22$
$9x - 5y = 13$
$0 = -9$
$false$
$No\ Solution\ \emptyset$

5) $-6x + 9y = 3$
$6x - 9y = -9$
$0 = -6$
$false$
$No\ Solution\ \emptyset$

7) $-1(4x - 6y) = (-10) - 1$
$4x - 6y = -14$
$-4x + 6y = 10$
$0 = 10$
$false$
$No\ Solution\ \emptyset$

9) $-1(-x - 5y) = 28(-1)$
$-x + 4y = -17$
$\underline{x + 5y = -28}$
$\dfrac{9y}{9} = -\dfrac{45}{9}$
$y = -5$
$-x - 5(-5) = 28$
$-x + 25 = 28$
$\underline{-25 \quad -25}$
$\dfrac{-x}{-1} = \dfrac{3}{-1}$
$x = -3$
$(-3, -5)$

11) $2(2x - y) = (5)2$
$5x + 2y = -28$
$\underline{4x - 2y = 10}$
$\dfrac{9x}{9} = \dfrac{-18}{9}$
$x = -2$
$2(-2) - y = 5$
$-4 - y = 5$
$\underline{+4 \qquad +4}$
$\dfrac{-y}{-1} = \dfrac{9}{-1}$
$y = -9$
$(-2, -9)$

13) $10x + 6y = 24$
$-6(-6x + y) = (4)(-6)$
$10x + 6y = 24$
$\underline{36x - 6y = -24}$
$\dfrac{46x}{46} = \dfrac{0}{46}$
$x = 0$
$10(0) + 6y = 24$
$\dfrac{6y}{6} = \dfrac{24}{6}$
$y = 4$
$(0, 4)$

15) $3(2x + 4y) = (24)3$
$\quad 4x - 12y = 8$
$\quad \underline{6x + 12y = 72}$
$\qquad \dfrac{10x}{10} = \dfrac{80}{10}$
$\qquad x = 8$
$\quad 2(8) + 4y = 24$
$\quad 16 + 4y = 24$
$\quad \underline{-16 \qquad -16}$
$\qquad \dfrac{4y}{4} = \dfrac{8}{4}$
$\qquad y = 2$
$\quad (8, 2)$

17) $2(-7x + 4y) = (-4)2$
$\quad 10x - 8y = -8$
$\quad \underline{-14x + 8y = 8}$
$\qquad \left(-\dfrac{4x}{4}\right) = -\dfrac{16}{-4}$
$\qquad x = 4$
$\quad -7(4) + 4y = -4$
$\quad -28 + 4y = -4$
$\quad \underline{+28 \qquad +28}$
$\qquad \dfrac{4y}{4} = \dfrac{24}{4}$
$\qquad y = 6$
$\quad (4, 6)$

19) $5x + 10y = 20$
$\quad 2(-6x - 5y) = (-3)2$
$\quad 5x + 10y = 20$
$\quad \underline{-12x - 10y = -6}$
$\qquad \left(-\dfrac{7x}{7}\right) = 14/-7$
$\qquad x = -2$
$\quad 5(-2) + 10y = 20$
$\quad -10 + 10y = 20$
$\quad \underline{+10 \qquad +10}$
$\qquad \dfrac{10y}{10} = \dfrac{30}{10}$
$\qquad y = 3$
$\quad (-2, 3)$

21) $5(-7x - 3y) = 12(5)$
$\quad -3(-6x - 5y) = 20(-3)$
$\quad -35x - 15y = 60$
$\quad \underline{18x + 15y = -60}$
$\qquad -\dfrac{17x}{-17} = \dfrac{0}{-17}$
$\qquad x = 0$
$\quad -7(0) - 3y = 12$
$\qquad \dfrac{-3y}{-3} = \dfrac{12}{-3}$
$\qquad y = -4$
$\quad (0, -4)$

23) $7(9x - 2y) = (-18)7$
$\quad -2(5x - 7y) = (-10)(-2)$
$\quad 63x - 14y = -126$
$\quad \underline{-10x + 14y = 20}$
$\qquad \dfrac{53x}{53} = \dfrac{-106}{53}$
$\qquad x = -2$
$\quad 9(-2) - 2y = -18$
$\quad -18 - 2y = -18$
$\quad \underline{+18 \qquad +18}$
$\qquad \dfrac{-2y}{-2} = \dfrac{0}{-2}$
$\qquad y = 0$
$\quad (-2, 0)$

25) $3(9x + 6y) = (-21)3$
$\quad 2(-10x - 9y) = 28(2)$
$\quad 27x + 18y = -63$
$\quad \underline{-20x - 18y = 56}$
$\qquad \dfrac{7x}{7} = \dfrac{-7}{7}$
$\qquad x = -1$
$\quad 9(-1) + 6y = -21$
$\quad -9 + 6y = -21$
$\quad \underline{+9 \qquad +9}$
$\qquad \dfrac{6y}{6} = -\dfrac{12}{6}$
$\qquad y = -2$
$\quad (-1, -2)$

27) $3(-7x + 5y) = (-8)3$

$\quad\ 5(-3x - 3y) = 12(5)$

$\quad\ -21x + 15 = -24$

$\quad\ \underline{-15x - 15 = 60}$

$\quad\quad\quad -\dfrac{36x}{36} = \dfrac{36}{-36}$

$\quad\quad\quad\quad x = -1$

$\quad\ -7(-1) + 5y = -8$

$\quad\quad\quad 7 + 5y = -8$

$\quad\quad\ \underline{-7 \qquad\quad -7}$

$\quad\quad\quad\quad \dfrac{5y}{5} = -\dfrac{15}{5}$

$\quad\quad\quad\quad\ y = -3$

$\quad (-1, -3)$

29) $5(-8x - 8y) = (-8)5$

$\quad\ 4(10x + 9y) = (1)4$

$\quad\ -40x - 40y = -40$

$\quad\ \underline{40x + 36y = 4}$

$\quad\quad\quad \dfrac{-4y}{-4} = \dfrac{-36}{-4}$

$\quad\quad\quad\quad y = 9$

$\quad\ -8x - 8(9) = -8$

$\quad\ -8x - 72 = -8$

$\quad\quad\ \underline{+72 \quad +72}$

$\quad\quad\quad \dfrac{-8x}{8} = \dfrac{64}{8}$

$\quad\quad\quad\quad x = 8$

$\quad (8, 9)$

31) $9y = 7 - x$

$\quad\ -18y + 4x = -26$

$\quad\ 9y = 7 - x$

$\quad\ \underline{+x \qquad + x}$

$\quad\ 2(9y + x) = (7)2$

$\quad\ -18y + 4x = -26$

$\quad\ \underline{\ 18y + 2x = 14}$

$\quad\quad\quad \dfrac{6x}{6} = \dfrac{-12}{6}$

$\quad\quad\quad\quad x = -2$

$\quad\ 9y = 7 - (-2)$

$\quad\ \dfrac{9y}{9} = \dfrac{9}{9}$

$\quad\ y = 1$

$\quad (-2, 1)$

33) $0 = 9x + 5y$

$\quad (7)y = \dfrac{2}{7}x(7)$

$\quad\quad 7y = 2x$

$\quad\ \underline{-7y\ - 7y}$

$\quad (-9)0 = (2x - 7y)(-9)$

$\quad\ 2(0) = (9x + 5y)2$

$\quad\ 0 = -18x + 63y$

$\quad\ \underline{0 = \quad 18x + 10y}$

$\quad\ \dfrac{0}{73} = \dfrac{73y}{73}$

$\quad\ 0 = y$

$\quad\ 0 = 9x + 5(0)$

$\quad\ \dfrac{0}{9} = \dfrac{9x}{9}$

$\quad\ 0 = x$

$\quad (0,0)$