Sec 3-2

Solving systems of equations using Algebra:

Substituion

Best if at least one equation is already solved for one of its variables

Elimination

Best if both equations are in Standard Form

Solve each. State answers as ordered pairs.

1. $y = -5x + 8$

   $6x - 3y = -87$

$6x - 3(-5x+8) = -87$

$6x + 15x - 24 = -87$

$21x - 24 = -87$

$+24 \quad +24$

$\frac{21x}{21} = \frac{-63}{21}$

$x = -3$

$y = -5(-3) + 8$

$y = 15 + 8$

$y = 23$

$(-3, 23)$

2. $2x + y = 2$

   $5x + 7y = 23$

$y = -2x + 2$

$5x + 7(-2x+2) = 23$

$5x - 14x + 14 = 23$

$-14 \quad -14$

$\frac{-9x}{-9} = \frac{9}{-9}$

$x = -1$

$2(-1) + y = 2$

$-2 \quad +2$

$y = 4$

$(-1, 4)$

Solve.

$9P - 5Q = 63$

$-\ 7P - 5Q = 49$

$\frac{2P}{2} = \frac{14}{2}$

$P = 7$

$9(7) - 5q = 63$

$63 - 5q = 63$

$-63 \quad -63$

$\frac{-5q}{-5} = \frac{0}{-5}$

$q = 0$

$(7, 0)$

Solve.

$5(c + d = -2)$

$-5c + 7d = 22$

$+\ 5c + 5d = -10$

$\frac{12d}{12} = \frac{12}{12}$

$d = 1$

$c + 1 = -2$

$-1 \quad -1$

$c = -3$

$(-3, 1)$

Solve.

$-2(3m - 4n = 7)$

$11m - 8n = 39$

$-6m + 8n = -14$

$11m - 8n = 39$

$\frac{5m}{5} = \frac{25}{5}$

$m = 5$

$3(5) - 4n = 7$

$15 - 4n = 7$

$-15 \quad -15$

$\frac{-4n}{-4} = \frac{-8}{-4}$

$n = 2$

$(5, 2)$