

Solving Systems of Equations by Elimination (with multiplication)

Date _____

Solve each system by elimination.

1) $-4x - 2y = -12$
 $4x + 8y = -24$
 Add $\begin{array}{r} -4x - 2y = -12 \\ 4x + 8y = -24 \\ \hline 6y = -36 \\ y = -6 \end{array}$
 $4(x) + 8(-6) = -24$
 $4x - 48 = -24$
 $4x = 24$
 $x = 6$
(6, -6)

2) $4x + 8y = 20$
 $-4x + 2y = -30$

3) $x - y = 11$
 $2x + y = 19$
 Add $\begin{array}{r} x - y = 11 \\ 2x + y = 19 \\ \hline 3x = 30 \\ x = 10 \end{array}$
 $2(10) + y = 19$
 $20 + y = 19$
 $y = -1$
(10, -1)

4) $-6x + 5y = 1$
 $6x + 4y = -10$

5) $-2x - 9y = -25$
 $-4x - 9y = -23$
 Add $\begin{array}{r} -2x - 9y = -25 \\ -1(-4x - 9y) = (-23)(-1) \\ \hline 2x = -2 \\ x = -1 \end{array}$
 (Add the top in new eq.)
 $-2(-1) - 9y = -25$
 $2 - 9y = -25$
 $-9y = -27$
 $y = 3$
(-1, 3)

6) $8x + y = -16$
 $-3x + y = -5$

7) $-6x + 6y = 6$
 $-6x + 3y = -12$
 Add $\begin{array}{r} -6x + 6y = 6 \\ -6x + 3y = -12 \\ \hline 3y = -18 \\ y = -6 \end{array}$
 $-6x + 3(6) = -12$
 $-6x + 18 = -12$
 $-6x = -30$
 $x = 5$
(5, 6)

8) $7x + 2y = 24$
 $8x + 2y = 30$

9) $5x + y = 9$
 $10x - 7y = -18$
 Add $\begin{array}{r} 5x + y = 9 \\ 10x - 7y = -18 \\ \hline -9y = -36 \\ y = 4 \end{array}$
 $5x + 4 = 9$
 $5x = 5$
 $x = 1$
(1, 4)

10) $-4x + 9y = 9$
 $x - 3y = -6$

11) $-3x + 7y = -16$
 $-9x + 5y = 16$
 Add $\begin{array}{r} -3x + 7y = -16 \\ -9x + 5y = 16 \\ \hline -16y = 64 \\ y = -4 \end{array}$
 $-9x + 5(-4) = 16$
 $-9x - 20 = 16$
 $-9x = 36$
 $x = -4$
(-4, -4)

2) $-7x + y = -19$
 $-2x + 3y = -19$