

WS - Solving Systems by Elimination

Tuesday, January 08, 2013
7:44 AM

$$\begin{array}{r} \textcircled{1} \quad x+y=5 \\ + (3x-y=7) \\ \hline 4x = 12 \\ x=3 \end{array}$$

$$\begin{array}{r} x+y=5 \\ 3+y=5 \\ y=2 \end{array}$$

Solution: (3,2)

$$\begin{array}{r} \textcircled{2} \quad 2x+y=3 \\ + (-2x+5y=-9) \\ \hline 6y=-6 \\ y=-1 \end{array}$$

$$\begin{array}{r} 2x+y=3 \\ 2x+(-1)=3 \\ 2x=4 \\ x=2 \end{array}$$

Solution (2,-1)

$$\begin{array}{r} \textcircled{3} \quad 3x+5y=0 \\ + (2x-5y=-25) \\ \hline 5x = -25 \\ x=-5 \end{array}$$

$$\begin{array}{r} 3x+5y=0 \\ 3(-5)+5y=0 \\ -15+5y=0 \\ 5y=15 \\ y=3 \end{array}$$

Solution (-5,3)

$$\begin{array}{r} \textcircled{4} \quad -4x-y=-6 \\ + (4x+3y=18) \\ \hline 2y=12 \\ y=6 \end{array}$$

$$\begin{array}{r} -4x-y=-6 \\ -4x-6=-6 \\ -4x=0 \\ x=0 \end{array}$$

Solution (0,6)

$$\begin{array}{r} \textcircled{5} \quad 2x-y=-5 \\ + (-2x-5y=11) \\ \hline -6y=6 \\ y=-1 \end{array}$$

$$\begin{array}{r} 2x-y=-5 \\ 2x-(-1)=-5 \\ 2x+1=-5 \\ 2x=-6 \\ x=-3 \end{array}$$

Solution (-3,-1)

$$\begin{array}{r} \textcircled{6} \quad 8=4x-3y \\ + (17=x+3y) \\ \hline 25=5x \\ x=5 \end{array}$$

$$\begin{array}{r} 8=4x-3y \\ 8=4(5)-3y \\ 8=20-3y \\ -12=-3y \\ y=4 \end{array}$$

Solution (5,4)

$$\begin{array}{r} \textcircled{7} \quad -6=3x+y \\ + (10=-5x-y) \\ \hline 4=-2x \\ x=-2 \end{array}$$

$$\begin{array}{r} -6=3x+y \\ -6=3(-2)+y \\ -6=-6+y \\ y=0 \end{array}$$

Solution (-2,0)

$$\begin{array}{r} \textcircled{8} \quad 3x+8y=-1 \\ + (-3x+y=-17) \\ \hline 9y=-18 \\ y=-2 \end{array}$$

$$\begin{array}{r} 3x+8y=-1 \\ 3x+8(-2)=-1 \\ 3x-16=-1 \\ 3x=15 \\ x=5 \end{array}$$

Solution (5,-2)

$$\begin{array}{r} \textcircled{9} \quad x+2y=15 \\ 5x=2y+3 \\ \downarrow \\ x+2y=15 \\ + (5x-2y=3) \\ \hline 6x = 18 \\ x=3 \end{array}$$

$$\begin{array}{r} x+2y=15 \\ 3+2y=15 \\ 2y=12 \\ y=6 \end{array}$$

Solution (3,6)

$$\begin{array}{r} \textcircled{10} \quad 7x-y=12 \\ -3y=7x+8 \\ \downarrow \\ 7x-y=12 \\ + (-7x-3y=8) \\ \hline -4y=20 \\ y=-5 \end{array}$$

$$\begin{array}{r} 7x-y=12 \\ 7x-(-5)=12 \\ 7x+5=12 \\ 7x=7 \\ x=1 \end{array}$$

Solution (1,-5)

$$\textcircled{11} \quad u=3x+13$$

$$u=3x+13$$

$$\textcircled{12} \quad 4x+12=-7u$$

$$4x+12=-7u$$

$$\begin{aligned}
 \textcircled{1} \quad & y = 3x + 13 \\
 & 2x = y - 9 \\
 & \downarrow \\
 & -3x + y = 13 \\
 & + (2x - y = -9) \\
 \hline
 & -x = 4 \\
 & \textcircled{x = -4}
 \end{aligned}$$

$$\begin{aligned}
 & y = 3x + 13 \\
 & y = 3(-4) + 13 \\
 & y = -12 + 13 \\
 & \textcircled{y = 1} \\
 & \text{Solution } (-4, 1)
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{2} \quad & 4x + 12 = -7y \\
 & -y + 12 = 4x \\
 & \downarrow \\
 & 4x + 7y = -12 \\
 & + (-4x - y = -12) \\
 \hline
 & 6y = -24 \\
 & \textcircled{y = -4}
 \end{aligned}$$

$$\begin{aligned}
 & 4x + 12 = -7y \\
 & 4x + 12 = -7(-4) \\
 & 4x + 12 = 28 \\
 & 4x = 16 \\
 & \textcircled{x = 4} \\
 & \text{Solution } (4, -4)
 \end{aligned}$$