Solutions to WS 33.1 - Solving Systems of Equations by Elimination, #1-15 odd

① $\begin{cases} x+y=10 \\ x-y=2 \end{cases}$ just add

$2x = 12$

$x = 6$

$x + y = 10$

$6 + y = 10$

$y = 4$

$\therefore (6, 4)$

③ $\begin{cases} 4x+2y=2 \\ 5x+2y=4 \end{cases}$ multiply by -1 $\Longrightarrow$ $-4x-2y=-2$, $5x+2y=4$ now add

$x = 2$

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$4x + 2y = 2$

$4(2) + 2y = 2$

$8 + 2y = 2$

$2y = -6$

$y = -3$

$\therefore (2, -3)$

⑤ $\begin{cases} 3x+2y=8 \\ 2x-6y=42 \end{cases}$ multiply by 3 $\Longrightarrow$ $9x+6y=24$, $2x-6y=42$

$11x = 66$

$x = 6$

$3x + 2y = 8$

$3(6) + 2y = 8$

$18 + 2y = 8$

$2y = -10$

$y = -5$

$\therefore (6, -5)$

⑦ $\begin{cases} 3x+4y=22 \\ x-5y=-37 \end{cases}$ multiply by -3 $\Longrightarrow$ $3x+4y=22$, $-3x+15y=111$

$19y = 133$

$y = 7$

$x - 5y = -37$

$x - 5(7) = -37$

$x - 35 = -37$

$x = -2$

$\therefore (-2, 7)$

⑨ $\begin{cases} 2x-5y=-19 \\ 3x+2y=0 \end{cases}$ multiply by -3 $\Longrightarrow$ $-6x+15y=57$; multiply by 2 $\Longrightarrow$ $6x+4y=0$

$19y = 57$

$y = 3$

$3x + 2y = 0$

$3x + 2(3) = 0$

$3x + 6 = 0$

$3x = -6$

$x = -2$

$\therefore (-2, 3)$

⑪ $\begin{cases} 2x-3y=6 \\ x+3y=12 \end{cases}$ just add

$3x = 18$

$x = 6$

$x + 3y = 12$

$6 + 3y = 12$

$3y = 6$

$y = 2$

$\therefore (6, 2)$

(13) $\begin{cases} x+y=0 \\ 2x-y=-8 \end{cases}$ just add

$3x = -8$

$x = \frac{-8}{3}$

$x + y = 0$

$-\frac{8}{3} + y = 0$

$y = \frac{8}{3}$

$\therefore \left(-\frac{8}{3}, \frac{8}{3}\right)$

(15) $\begin{cases} x-2y=11 \\ 2y+8=-2x \end{cases}$ rewrite $\Rightarrow$ $\begin{cases} x-2y=11 \\ 2x+2y=-8 \end{cases}$

$3x = 3$

$x = 1$

$x - 2y = 11$

$1 - 2y = 11$

$-2y = 10$

$y = -5$

$\therefore (1, -5)$