2) $3(x+12)-5(1-2x)=-41$

$3x-36-5+10x=-41$

$13x-\cancel{41}=-\cancel{41}$

$\boxed{x=0}$

4) $(x-1)\cdot(x+2)=x(x+5)-6$

$\cancel{x^2}+2x-x-2=\cancel{x^2}+5x-6$

$4=4x$

$\boxed{x=1}$

6) $x+\dfrac{2}{x-3}=3+\dfrac{2}{x-3} \qquad /\cdot x-3$

$(x-3)(x)+2=3(x-3)+2$

$x^2-3x+2=3x-9-2$

$$x^2 - 3x + 2 = 3x - 9 - 2$$

$$\boxed{x^2 - 6x = -13}$$

8) $(2x-5)^2 - (1+3x)^2 = 5(1-x)\cdot(1+x) + 19$

$$(2x-5)(2x-5) - 1\big((1+3x)(1+3x)\big) = (5-5x)\cdot(1+x) + 19$$

$$4x^2 - 10x - 10x + 25 - 1(1 + 3x + 3x + 9x) = 5 + 5x - 5x - 5x^2 + 19$$

$$4x^2 - 10x - 10x + 25 - 1 - 3x - 3x - 9x^2 = 5 - 5x^2 + 19$$

$$4x^2 - 20x + 25 - 1 - 6x - 9x^2 = 5 - 5x^2 + 19$$

$$-20x + 24 - 6x = 5 + 19$$

$$= 24$$

$$\boxed{x = 0}$$

$$x - \frac{x-1}{5} = \frac{4x+1}{5} \qquad .10$$

$$5x - x - 1 = 4x + 1$$

$$x - x$$

$$\boxed{0 = 0}$$

$$\frac{x+2}{x-2} + \frac{x-2}{x+2} = \frac{2(x^2+4)}{x^2-4} \qquad .12 \quad X$$

$$x^2 - 4 = (x-2)(x+2)$$

$$(x+2)(x-2) = (x-2)(x+2)$$

$$\boxed{0 = 0}$$

$$\frac{4}{x+1} = \frac{4x-2}{x+2} - 4 \qquad .14 \quad X$$

$$4(x+2) = (x+1)(4x-2) - 4[(x+2)(x+1)]$$

$$4x + 8 = 4x^2 - 2x + 4x - 2 - 4(x^2 + x + 2x + 2)$$

$$4x + 8 = 4x^2 - 2x + 4x - 2 - 4(x^2 + x + 2x + 2)$$

$$4x + 8 = 4\cancel{x^2} + 2x - 2 - \cancel{4x^2} - 4x - 8x - 8$$

$$4x + 8 = -10x - 10$$

$$14x = -18$$

$$\boxed{x = -\frac{9}{7}}$$

$$\frac{x+3}{x} - \frac{12}{x-3} = 1 \qquad .16$$

$$(x-3)(x+3) - 12(x) = x(x-3)$$

$$\cancel{x^2} + 3x - \cancel{3x} - 9 - 12x = \cancel{x^2} - \cancel{3x}$$

$$3x - 9 - 12x =$$

$$-9x = 9$$

$$\boxed{x = 1}$$

$$\frac{2x-3}{5} - 1 + \frac{2x-4}{8} = \frac{3x-8}{2} - \frac{3x-2}{4} \qquad .18$$

$$8(2x-3) - 40 + 5(2x-4) = 20(3x-8) - 1\left[10(3x-2)\right]$$

$$16X - 24 - 40 + 10X - 20 = 60X - 160 - 30X + 20$$

$$-84 + 26X = -140 + 30X$$

$$-4X = -56$$

$$\boxed{X = 14}$$

$$\frac{7x+11}{18} + \frac{x+9}{10} = \frac{43-3x}{5} - \frac{145-x}{24} \qquad .20$$

$$20(7X+11) + 36(X+9) = 72(43-3x) - 1\left[15(145-x)\right]$$

$$140X + 220 + 36X + 324 = 3096 - 26X - 2175 + 15X$$

$$176X + 544 = 921 - 201X$$

$$377X = 377 / :377$$

$$\boxed{X = 1}$$

2. $\begin{cases} y = 5 \\ x - 2y - 3 = 0 \end{cases}$

$X - 2(5) - 3 = 0$

$\underbrace{}_{-10} - 3 = -$

$x = 13 \quad , \quad y = 5$

4. $\begin{cases} 3x - 5y = 26 \\ y = -4 \end{cases}$

$3x - 5(-4) = 26 \qquad 6 - 5y = 26$

$3x + 20 = 26 \qquad -5y = 20 \;/:5$

$x = 2 , y = -4$

6. $\begin{cases} 3x + 5y = 47 \\ y = 11 - x \end{cases}$

$3x + 5(11 - x) = 47 \qquad y = 11 - 4$

$y = 7$

$5x + 5(11 - x) - 11$

$3x + 55 - 5x = 47$

$-2x = -8 \quad / : -2$

$\boxed{x = 4, y = 7}$

$y = 7$

8. $\begin{cases} y = 5x + 8 \\ 2x - 9y = 57 \end{cases}$

$2x - 9(5x + 8) = 57$

$2x - 45x - 72 = 57$

$43x = 129$

$\boxed{x = 3, y = 7}$

$y = 15 + 8$

$y = 7$

10. $\begin{cases} y = 12x - 4 \\ 4x - 7y = -2 \end{cases}$

$4x - 7(12x - 4) = -2$

$4x - 84x + 28 = -2$

$y = 12\left(\frac{3}{8}\right) - 4$

$y = 4.5$

$4x - 84x + 28 = -2$

$y = 4.5-$

$y = 0.5$

$-80x + 28 = -2$

$-80x = -30$

$$x = \frac{30}{80}$$

$$\boxed{x = \frac{3}{8} \qquad y = \frac{1}{2}}$$

12. $\begin{cases} x - 2y = 19 \\ y + 4x = 4 \end{cases}$

$x - 2y = 19$

$2y + 8x = 8$

$9x = 27$

$3 - 2y = 19$

$-2y = 16$

$y = -8$

$$\boxed{x = 3 \,,\; y = -8}$$

14. $\begin{cases} 8x + 7y = 34 \\ -8x + 2y = 20 \end{cases}$

$8x + 7(\;) = 34$

14. $\begin{cases} 8x + 7y = 34 \\ -8x + 2y = 20 \end{cases}$

$9y = 54$

$8x + 7(6) = 34$

$8x + 42 = 34$

$\boxed{y = 6 \qquad x = -1}$

$^{15}y = 15$

16. $\begin{cases} x + 5y = 5 \\ -3x + 4y = 23 \end{cases} \cdot 3$

$x + 2 \cdot 5 = 5$

$x + 10 = 5$

$19y = 38$

$x = -5$

$\boxed{y = 2 \ , \ x = -5}$

18. $\begin{cases} 4x - 5y = -38 \\ 12x + 7y = -70 \end{cases} \quad 1 \cdot -3$

$4x - (2)5 = -38$

$+15y = 114$

$4x - 10 = -38$

$7y = -70$

$4x = -28$

$22 - 44$

$22 = 44$

$$\boxed{y = 2 \quad , x = 7}$$

20. $\begin{cases} 12x + 5y = 92 \\ 3x - 8y = 97 \end{cases}$ $/. -4$

$+32y = -388$

$3x - 8(-8) = 97$

$5y \quad 92$

$3x + 64 = 97$

$x = 11$

$37y = -296$

$$\boxed{y = -8 \quad , x = 11}$$

22. $\begin{cases} 10x + 12y = 16 \\ 25x - 8y = 21 \end{cases}$ $\cdot -2.5$

$-30y = -40$

$10x + 6 = 16$

$-8y = 21$

$\boxed{x = 1}$

$-38y = 19$

$$-38y = 19$$

$$\boxed{y = -\frac{1}{2}, \quad x = 7}$$