7 $\begin{pmatrix} 3 & 4 \\ 2 & 1 \end{pmatrix}$

$d = (3)(1) - (4)(2)$

$= 3 - 8$

$= -5$

8. $\begin{pmatrix} 5 & -3 \\ -2 & 6 \end{pmatrix}$

$d = (5)(6) - (-3)(-2)$

$= 30 - 6$

$= 24$

9. $\begin{pmatrix} -1 & 0 \\ 0 & 3 \end{pmatrix}$

$d = (-1)(3) - (0)(0)$

$= -3$

15.

$3x + 4y = 16$

$x - 2y = 6$

$D = \begin{vmatrix} 3 & 4 \\ 1 & -2 \end{vmatrix} = -6 - 4 = -16$

$D_x = \begin{vmatrix} 16 & 4 \\ 6 & -2 \end{vmatrix} = (16)(-2) - (4)(6) = -56$

$D_y = \begin{vmatrix} 3 & 16 \\ 1 & 6 \end{vmatrix} = (3)(6) - (16)(1) = 2$

$x = \frac{-56}{-16} = 5.1 = \frac{28}{5}$

$x = \frac{8}{10} = \frac{-1}{5}$

16

$2x + 6y = 1$

$3x - 5y = 8$

$x = \frac{53}{2x}$

$y = \frac{13}{2x}$

17

$4x - 5y = 7$

$-2x + y = 3$

$D = \begin{vmatrix} 4 & -5 \\ -2 & 1 \end{vmatrix} = -6$

$D_x = \begin{vmatrix} 7 & -5 \\ 3 & 1 \end{vmatrix} = 22$

$D_y = \begin{vmatrix} 4 & 7 \\ -2 & 3 \end{vmatrix} = 26$

$x = \frac{22}{-6} = -\frac{11}{3}$

$y = \frac{26}{-6} = -\frac{13}{3}$

18

$5x - y = 18$

$2x + 3y = 1$

$D = \begin{vmatrix} 5 & -1 \\ 2 & 3 \end{vmatrix} = 17$

$D_x = \begin{vmatrix} 18 & -1 \\ 1 & 3 \end{vmatrix} = 55$

$D_y = \begin{vmatrix} 5 & 18 \\ 2 & 1 \end{vmatrix} = -31$

$x = \frac{55}{17}$

$y = \frac{-31}{17}$

19 $4x - 3y = 10$

$6x + 5y = 1$

$D = \begin{vmatrix} 4 & -3 \\ 6 & 5 \end{vmatrix} = 20 - (-18) = 38$

$D_x = \begin{vmatrix} 10 & -3 \\ 1 & 5 \end{vmatrix} = 53$

$D_y = \begin{vmatrix} 4 & 10 \\ 6 & 1 \end{vmatrix} = -56$

$x = \frac{53}{38}$

$y = \frac{-56}{38} = -\frac{28}{19}$

20)

$x + y = 1$

$2x - 3y = 1$

$D = \begin{vmatrix} 1 & 1 \\ 2 & -3 \end{vmatrix} = -3 - 2 = -5$

$D_x = \begin{vmatrix} 1 & 1 \\ 1 & -3 \end{vmatrix} = -3 - 1 = -4$

$D_y = \begin{vmatrix} 1 & 1 \\ 2 & 1 \end{vmatrix} = 1 - 2 = -1$

$x = \frac{-4}{-5} = \frac{4}{5}$

$y = \frac{-1}{-5} = \frac{1}{5}$

21.

$2x + 5y = 1$

$4x - 5y = 2$

$D = \begin{vmatrix} 2 & 5 \\ 4 & -5 \end{vmatrix} = -30$

$D_x = \begin{vmatrix} 1 & 5 \\ 2 & -5 \end{vmatrix} = -5 - (-5) = 0$

$D_y = \begin{vmatrix} 2 & 1 \\ 4 & 2 \end{vmatrix} = 4 - 4 = 0$

$x = \frac{-15}{-30} = \frac{1}{2}$

$y = \frac{0}{-30} = 0$

22. $3x - 4y = -3$

$x - 5y = 2$

$D = \begin{vmatrix} 3 & -4 \\ 1 & -5 \end{vmatrix} = -15 - (-4) = -11$

$D_x = \begin{vmatrix} -3 & -4 \\ 2 & -5 \end{vmatrix} = 23$

$D_y = \begin{vmatrix} 3 & -3 \\ 1 & 2 \end{vmatrix} = 9$

$x = \frac{23}{-11} = -\frac{23}{11}$

$y = \frac{9}{-11} = -\frac{9}{11}$

23 $3x - 4y = 12$

$5x - 3y = 10$

$D = \begin{vmatrix} 3 & -4 \\ 5 & -3 \end{vmatrix} = 11$

$D_x = \begin{vmatrix} 12 & -4 \\ 10 & -3 \end{vmatrix} = 4$

$D_y = \begin{vmatrix} 3 & 12 \\ 5 & 10 \end{vmatrix} = -30$

$x = \frac{4}{11}$

$y = \frac{-30}{11}$

24 $4x - 6y = -5$

$6x - 4y = 2$

$D = \begin{vmatrix} 4 & -6 \\ 6 & -4 \end{vmatrix} = 20$

$D_x = \begin{vmatrix} -5 & -6 \\ 2 & -4 \end{vmatrix} = 32$

$D_y = \begin{vmatrix} 4 & -5 \\ 6 & 2 \end{vmatrix} = 38$

$x = \frac{32}{20}$

$y = \frac{58}{20}$

25 $4x - 5y = -1$

$3x + 2y = 12$

$D = \begin{vmatrix} 4 & -5 \\ 3 & 2 \end{vmatrix} = 23$

$D_x = \begin{vmatrix} -1 & -5 \\ 12 & 2 \end{vmatrix} = 58$

$D_y = \begin{vmatrix} 4 & -1 \\ 3 & 12 \end{vmatrix} = 51$

$x = \frac{58}{23}$

$x = \frac{51}{23}$

26. $3x - 2y = 4$

$2x - 3y = 1$

$D = \begin{vmatrix} 3 & -2 \\ 2 & -3 \end{vmatrix} = -5$

$D_x = \begin{vmatrix} 4 & -2 \\ 1 & -3 \end{vmatrix} = -12 - (-2) = -10$

$D_y = \begin{vmatrix} 3 & 4 \\ 2 & 1 \end{vmatrix} = -5$

$x = \frac{-10}{-5} = 2$

$y = \frac{-5}{-5} = 1$

23 $3x - 4y = 12$

$5x - 3y = 10$

$D = \begin{vmatrix} 3 & -4 \\ 5 & -3 \end{vmatrix} = 11$

$D_x = \begin{vmatrix} 12 & -4 \\ 10 & -3 \end{vmatrix} = 4$

$D_y = \begin{vmatrix} 3 & 12 \\ 5 & 10 \end{vmatrix} = -30$

$x = \frac{4}{11}$

$y = \frac{-30}{11}$

24. $4x - 6y = -5$

$6x - 4y = 2$

$D = \begin{vmatrix} 4 & -6 \\ 6 & -4 \end{vmatrix} = 20$

$D_x = \begin{vmatrix} -5 & -6 \\ 2 & -4 \end{vmatrix} = 32$

$D_y = \begin{vmatrix} 4 & -5 \\ 6 & 2 \end{vmatrix} = 38$

$x = \frac{32}{20}$

$y = \frac{58}{20}$

25 $4x - 5y = -1$

$3x + 2y = 12$

$D = \begin{vmatrix} 4 & -5 \\ 3 & 2 \end{vmatrix} = 23$

$D_x = \begin{vmatrix} -1 & -5 \\ 12 & 2 \end{vmatrix} = 58$

$D_y = \begin{vmatrix} 4 & -1 \\ 3 & 12 \end{vmatrix} = 51$

$x = \frac{58}{23}$

$x = \frac{51}{23}$

26. $3x - 2y = 4$

$2x - 3y = 1$

$D = \begin{vmatrix} 3 & -2 \\ 2 & -3 \end{vmatrix} = -5$

$D_x = \begin{vmatrix} 4 & -2 \\ 1 & -3 \end{vmatrix} = -12 - (-2) = -10$

$D_y = \begin{vmatrix} 3 & 4 \\ 2 & 1 \end{vmatrix} = -5$

$x = \frac{-10}{-5} = 2$

$y = \frac{-5}{-5} = 1$

27 $x+2y-z=2$

$x-y+z=0$

$2x-y+z=5$

$D=\begin{vmatrix}1&2&-1\\1&-1&1\\2&-1&1\end{vmatrix}=1(-1+1)-2(1-2)+(-1)(-1+2)=0-2(-1)-1(1)=1$

$D_x=\begin{vmatrix}2&2&-1\\0&-1&1\\3&-1&1\end{vmatrix}=3$

$D_y=\begin{vmatrix}1&2&-1\\1&0&1\\2&3&1\end{vmatrix}=-4$

$x=\frac{3}{1}=3$

$y=\frac{-4}{1}=-4$

$z=\frac{-7}{1}=-7$

28 $3x+y-2z=2$

$x-2y+z=3$

$2x-y-z=1$

$D=\begin{vmatrix}3&1&-2\\1&-2&1\\2&-1&-1\end{vmatrix}=-8$

$D_x=\begin{vmatrix}2&1&-2\\3&-2&1\\1&-1&-1\end{vmatrix}=-2$

$D_y=\begin{vmatrix}3&2&-2\\1&3&1\\2&1&-1\end{vmatrix}=18$

$D_z=\begin{vmatrix}3&1&2\\1&-2&3\\2&-1&1\end{vmatrix}=14$

$x=\frac{-2}{-8}$

$y=\frac{18}{-8}$

$z=\frac{14}{-8}$

29 $x+y+2z=4$

$x+y+2=1$

$2+y-z$

$D=\begin{vmatrix} 1 & 1 & 2 \\ 1 & 1 & 1 \\ 2 & 1 & -1 \end{vmatrix}=9$

$D_x=\begin{vmatrix} 4 & 1 & 2 \\ 1 & 1 & 1 \\ 3 & 1 & -1 \end{vmatrix}=12$

$D_y\begin{vmatrix} 1 & 4 & 2 \\ 1 & 1 & 1 \\ 2 & 3 & -1 \end{vmatrix}=10$

$D=\begin{vmatrix} 1 & 1 & 4 \\ 1 & -1 & 1 \\ 2 & 1 & 3 \end{vmatrix}=7$

$x=\frac{12}{9}$

$y=\frac{10}{9}$

$z=\frac{7}{9}$

30 $2x+y+2=6$

$x-2y+2=2$

$3x-y+2z=10$

$D=\begin{vmatrix} 2 & 1 & 1 \\ 1 & -2 & 1 \\ 3 & -1 & 2 \end{vmatrix}=0$

$D_x=\begin{vmatrix} 6 & 1 & 1 \\ 2 & -2 & 1 \\ 10 & -1 & 2 \end{vmatrix}=6$

No tiene solución

49. $\begin{vmatrix} 4 & 6 \\ -2 & 4 \end{vmatrix}=3$

$(4)(4)-(6)(-2)=32$

$4y-(-12)=32$

$4y+12=32$

$4y=32-12$

$y=\frac{20}{4}$

$y=5$

$(a)(d)-(b)(c)$

50. $\begin{vmatrix} b & -3 & -4 \\ b+2 & -6 \end{vmatrix}=14$

$(b-3)(-6)-(-4)(b+2)=14$

$-6b+18+4b+8=14$

$-2b+26=14$

$-2b=-12$

$b=\frac{-12}{-2}$

$b=6$

5.3

1) $\begin{cases} 5x + 8E = 90 \\ 3A + 7E = 65 \end{cases}$

$$D = \begin{vmatrix} 5 & 8 \\ 3 & 7 \end{vmatrix} = (5)(7) - (8)(3) = 11$$

$$D_A = \begin{vmatrix} 90 & 8 \\ 65 & 7 \end{vmatrix} = 630 - 520 = 110$$

$$D_E = \begin{vmatrix} 5 & 90 \\ 3 & 65 \end{vmatrix} = 325 - 270 = 55$$

$$A = \frac{110}{11} = 10$$

$$B = \frac{55}{11} = 5$$