

Solve each equation or system of equations for the indicated variable(s), if possible.

1. $2(x - 3) + (y - 4) - 2(z - 1) = 0$, for x .

$$\text{Solution is : } \left\{ x = 4 - \frac{1}{2}y + z \right\}$$

2.
$$\left. \begin{array}{l} 2(x - 3) + (y - 4) - 2(z - 1) = 0 \\ y + z = 7 \\ x + y = 10 \end{array} \right\} \text{ for } x$$

$$\text{Solution is : } \{y = 2, z = 5, x = 8\}$$

3.
$$\left. \begin{array}{l} 2a + 4b = 0 \\ \sqrt{a^2 + b^2 + \frac{1}{16}} = 1 \end{array} \right\} \text{ for } a \text{ and } b$$

$$\text{Solution is : } \left\{ b = \frac{\sqrt{3}}{4}, a = -\frac{\sqrt{3}}{2} \right\} \text{ or } \left\{ b = \frac{-\sqrt{3}}{4}, a = \frac{\sqrt{3}}{2} \right\}$$

4.
$$\left. \begin{array}{l} 3a + 4b = 1 \\ a^2 + b^2 = 4 \end{array} \right\} \text{ for } a \text{ and } b$$

$$\text{Solution is : } \left\{ b = \frac{4}{25} + \frac{9}{25}\sqrt{11}, a = \frac{3}{25} - \frac{12}{25}\sqrt{11} \right\} \text{ or } \left\{ b = \frac{4}{25} - \frac{9}{25}\sqrt{11}, a = \frac{3}{25} + \frac{12}{25}\sqrt{11} \right\}$$

5.
$$\left. \begin{array}{l} 1 + 4t = 6 + s \\ 2 - 4t = 3 - 7s \\ \frac{1}{2} + t = 1 + s \end{array} \right\} \text{ for } t \text{ and } s.$$

$$\text{Solution is : } \left\{ t = \frac{3}{2}, s = 1 \right\}$$

$$6. \left. \begin{array}{l} 3 + t = 4 - 2s \\ 1 - 2t = 3 + s \\ 2 + 2t = -1 - s \end{array} \right\} \text{for } t \text{ and } s.$$

No solution.