Simultaneous Equations - 3 Variables
SOLUTIONS

1. $x = 1, y = 2, z = 3$

2. $x = 2, y = 1, z = -1$

3. $x = 3, y = 0, z = -2$

4. $x = 6, y = -2, z = -3$

5. $x = 3, y = -2, z = 1$　(S*)

6. $x = -2, y = 2, z = -2$

7. $x = 0, y = 2, z = 3$

8. $x = 2, y = 1, z = 3$

9. $x = 6, y = 4, z = 12$　(S*)

10. $x = 3, y = 8, z = -2$

11. $x = 12, y = -10, z = 3$

Question 5

$$[1] \quad 2x - 3y + 4z = 16$$
$$[2] \quad x + 3y - 2z = -5$$
$$[3] \quad 3x - 2y + 3z = 16$$

$$[1] \quad 2x - 3y + 4z = 16$$
$$[2] \quad x + 3y - 2z = -5$$
$$\overline{[A] \quad 3x + 2z = 11}$$

$$[2](\times 2) \quad 2x + 6y - 4z = -10$$
$$[3](\times 3) \quad 9x - 6y + 9z = 48$$
$$\overline{[B] \quad 11x + 5z = 38}$$

$$[A] \quad 3x + 2z = 11 \quad (\times 5)$$
$$[B] \quad 11x + 5z = 38 \quad (\times -2)$$
$$[A](\times 5) \quad 15x + 10z = 55$$
$$[B](\times -2) \quad -22x - 10z = -76$$
$$\overline{-7x = -21}$$
$$x = 3$$
$$[A] \quad 3(3) + 2z = 11$$
$$2z = 11 - 9$$
$$2z = 2$$
$$z = 1$$
$$[2] \quad (3) + 3y - 2(1) = -5$$
$$3y = -5 - 3 + 2$$
$$3y = -6$$
$$y = -2$$

Question 9

$$[1] \quad \frac{x}{3} + \frac{y}{2} + z4 = 7 \quad (\times 12)$$

$$[2] \quad \frac{x}{2} + y + \frac{z}{3} = 11 \quad (\times 6)$$

$$[3] \quad \frac{x}{6} + \frac{y}{4} + \frac{z}{6} = 4 \quad (\times 12)$$

$$[1] \quad 4x + 6y + 3z = 84$$
$$[2] \quad 3x + 6y + 2z = 66$$
$$[3] \quad 2x + 3y + 2z = 48$$

$$[2] \quad 3x + 6y + 2z = 66$$
$$[3](\times -1) \quad -2x - 3y - 2z = -48$$
$$\overline{\quad [A] \quad x + 3y = 18 \quad}$$

$$[1](\times 2) \quad 8x + 12y + 6z = 168$$
$$[3](\times -3) \quad -6x - 9y - 6z = -144$$
$$\overline{\quad [B] \quad 2x + 3y = 24 \quad}$$

$$[A] \quad x + 3y = 18$$
$$[B] \quad 2x + 3y = 24 \quad (\times -1)$$
$$\overline{\quad [A] \quad x + 3y = 18 \quad}$$
$$[B](\times -1) \quad -2x - 3y = -24$$
$$\overline{\quad -x = -6 \quad}$$
$$x = 6$$
$$[A] \quad (6) + 3y = 18$$
$$3y = 18 - 6$$
$$3y = 12$$
$$y = 4$$
$$[3] \quad 2(6) + 3(4) + 2z = 48$$
$$2z = 48 - 12 - 12$$
$$2z = 24$$
$$z = 12$$