

### Exercise 5(A)

(i)  $(3x - 1)^2 = 5(x + 8)$

(ii)  $5x^2 - 8x = -3(7 - 2x)$

(iii)  $(x - 4)(3x + 1) = (3x - 1)(x + 2)$

(iv)  $x^2 + 5x - 5 = (x - 3)^2$

(v)  $7x^3 - 2x^2 + 10 = (2x - 5)^2$

(vi)  $(x - 1)^2 + (x + 2)^2 + 3(x + 1) = 0$

**Solution:**

(i)  $(3x - 1)^2 = 5(x + 8)$   
 $\Rightarrow (9x^2 - 6x + 1) = 5x + 40$   
 $\Rightarrow 9x^2 - 11x - 39 = 0$ ; which is of the general form  $ax^2 + bx + c = 0$ .  
 Thus, the given equation is a quadratic equation.

(ii)  $5x^2 - 8x = -3(7 - 2x)$   
 $\Rightarrow 5x^2 - 8x = 6x - 21$   
 $\Rightarrow 5x^2 - 14x + 21 = 0$ ; which is of the general form  $ax^2 + bx + c = 0$ .  
 Thus, the given equation is a quadratic equation.

(iii)  $(x - 4)(3x + 1) = (3x - 1)(x + 2)$   
 $\Rightarrow 3x^2 + x - 12x - 4 = 3x^2 + 6x - x - 2$   
 $\Rightarrow 16x + 2 = 0$ ; which is not of the general form  $ax^2 + bx + c = 0$ . And it's a linear equation.  
 Thus, the given equation is not a quadratic equation.

(iv)  $x^2 + 5x - 5 = (x - 3)^2$   
 $\Rightarrow x^2 + 5x - 5 = x^2 - 6x + 9$   
 $\Rightarrow 11x - 14 = 0$ ; which is not of the general form  $ax^2 + bx + c = 0$ . And it's a linear equation.  
 Thus, the given equation is not a quadratic equation.

(v)  $7x^3 - 2x^2 + 10 = (2x - 5)^2$   
 $\Rightarrow 7x^3 - 2x^2 + 10 = 4x^2 - 20x + 25$   
 $\Rightarrow 7x^3 - 6x^2 + 20x - 15 = 0$ ; which is not of the general form  $ax^2 + bx + c = 0$ . And it's a cubic equation.  
 Thus, the given equation is not a quadratic equation.

(vi)  $(x - 1)^2 + (x + 2)^2 + 3(x + 1) = 0$   
 $\Rightarrow x^2 - 2x + 1 + x^2 + 4x + 4 + 3x + 3 = 0$   
 $\Rightarrow 2x^2 + 5x + 8 = 0$ ; which is of the general form  $ax^2 + bx + c = 0$ .  
 Thus, the given equation is a quadratic equation.

**Solution:**

Given quadratic equation,  $x^2 - 2x - 15 = 0$

## Chapter 5: Quadratic Equations

We know that, for  $x = 5$  to be a solution of the given quadratic equation it should satisfy the equation.

Now, on substituting  $x = 5$  in the given equation, we have

$$\begin{aligned}\text{L.H.S} &= (5)^2 - 2(5) - 15 \\ &= 25 - 10 - 15 \\ &= 0 \\ &= \text{R.H.S}\end{aligned}$$

Therefore,  $x = 5$  is a solution of the given quadratic equation  $x^2 - 2x - 15 = 0$

**(ii) Is  $x = -3$  a solution of the quadratic equation  $2x^2 - 7x + 9 = 0$ ?**

**Solution:**

Given quadratic equation,  $2x^2 - 7x + 9 = 0$

We know that, for  $x = -3$  to be solution of the given quadratic equation it should satisfy the equation.

Now, on substituting  $x = -3$  in the given equation, we have

$$\begin{aligned}\text{L.H.S} &= 2(-3)^2 - 7(-3) + 9 \\ &= 18 + 21 + 9 \\ &= 48 \\ &\neq \text{R.H.S}\end{aligned}$$

Therefore,  $x = -3$  is not a solution of the given quadratic equation  $2x^2 - 7x + 9 = 0$ .

