

Ex 4.1

$$\begin{aligned} \text{(i)} \quad (x+1)^2 &= 2x-3 \\ \Rightarrow x^2+1+2x &= 2x-3 \\ \Rightarrow x^2+4 &= 0 \end{aligned}$$

\therefore it is of the form $ax^2+bx+c=0$ where a, b, c are real numbers
 \therefore quadratic eqn.

$$\begin{aligned} \text{(ii)} \quad x^2-2x &= (-2)(3-x) \\ \Rightarrow x^2-2x &= -6+2x \\ \Rightarrow x^2-4x+6 &= 0 \end{aligned}$$

\therefore given eqn. is quad.

$$\begin{aligned} \text{(iii)} \quad (x-2)(x+1) &= (x-1)(x+3) \\ \Rightarrow x^2-x-2 &= x^2+2x-3 \\ \Rightarrow 3x-1 &= 0 \end{aligned}$$

\therefore given eqn. is not quadratic

$$\begin{aligned} \text{(iv)} \quad (x-3)(2x+1) &= x(x+5) \\ \Rightarrow 2x^2+x-6x-3 &= x^2+5x \\ \Rightarrow x^2-10x-3 &= 0 \end{aligned}$$

\therefore given eqn is quadratic.

$$\begin{aligned} \text{(v)} \quad (2x-1)(x-3) &= (x+5)(x-1) \\ \Rightarrow 2x^2-6x-x+3 &= x^2+4x-5 \\ \Rightarrow x^2-11x+8 &= 0 \end{aligned}$$

\therefore given eqn. is quad.

$$\begin{aligned} \text{(vi)} \quad x^2+3x+1 &= (x-2)^2 \\ \Rightarrow x^2+3x+1 &= x^2+4-4x \\ \Rightarrow 7x-3 &= 0 \end{aligned}$$

\therefore given eqn. is not quadratic.

$$\begin{aligned} \text{(vii)} \quad (x+2)^3 &= 2x(x^2-1) \\ \Rightarrow x^3+8+6x^2+12x &= 2x^3-2x \\ \Rightarrow x^3-6x^2-14x-8 &= 0 \end{aligned}$$

\therefore given equation is not quadratic

$$\begin{aligned} \text{(viii)} \quad x^3-4x^2-x+1 &= (x-2)^3 \\ \Rightarrow x^3-4x^2-x+1 &= x^3-8-6x^2+12x \\ \Rightarrow 2x^2-13x+9 &= 0 \end{aligned}$$

\therefore given equation is quadratic.