## Chapter 4:- Quadratic Equations

### Ex 4.1

Check whether the following are quadratic equations

| | |
|---|---|
| (i) $(x+1)^2=2(x-3)$ | (v) $(2x-1)(x-3)=(x+5)(x-1)$ |
| (ii) $x-2x=(-2)(3-x)$ | (vi) $x^2+3x+1=(x-2)^2$ |
| (iii) $(x-2)(x+1)=(x-1)(x+3)$ | (vii) $(x+2)^3=2x(x^2-1)$ |
| (iv) $(x-3)(2x+1)=x(x+5)$ | (viii) $x^3-4x^2-x+1=(x-2)^3$ |

**Solution:**

**(ii)** $x^2-2x=(-2)(3-x)$

$\Rightarrow x^2-2x=-6+2x$

$\Rightarrow x^2-2x-2x+6=0$

$\Rightarrow x^2-4x+6=0$

Here, degree of equation is 2.

Therefore, it is a Quadratic Equation.

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

$\Rightarrow x^2+x-2x-2=x^2+3x-x-3=0$

$\Rightarrow x^2+x-2x-2-x^2-3x+x+3=0$

$\Rightarrow x-2x-2-3x+x+3=0$

$\Rightarrow -3x+1=0$

Here, degree of equation is 1.

Therefore, it is not a Quadratic Equation.

**(iv)** $(x-3)(2x+1)=x(x+5)$

$\Rightarrow 2x^2+x-6x-3=x^2+5x$

$\Rightarrow 2x^2+x-6x-3-x^2-5x=0$

$\Rightarrow x^2-10x-3=0$

Here, degree of equation is 2.

Therefore, it is a quadratic equation.

**Do your self**

**(i), (v), (vi), (vii)and (viii)**

2. Represent the following situations in the form of Quadratic Equations:

(i) The area of rectangular plot is $528m^2$. The length of the plot (in metres) is one more than twice its breadth. We need to find the length and breadth of the plot.

(ii) The product of two consecutive numbers is 306. We need to find the integers.

(iii) Rohan's mother is 26 years older than him. The product of their ages (in years) after 3 years will be 360. We would like to find Rohan's present age.

(iv) A train travels a distance of 480 km at uniform speed. If, the speed had been 8km/h less, then it would have taken 3 hours more to cover the same distance. We need to find speed of the train.

Ans.(i)

We are given that area of a rectangular plot is $528 m^2$.

Let breadth of rectangular plot be x metres

Length is one more than twice its breadth.

Therefore,

length of rectangular plot is (2*x* + 1) metres

Area of rectangle = length × breadth

⇒ 528 = *x* (2*x* + 1)

⇒ 528 = $2x^2 + x$

⇒ $2x^2 + x$ – 528 = 0

This is a Quadratic Equation.

(ii)

Let two consecutive numbers be x and (x + 1).

It is given that *x* (*x* + 1) = 306

⇒ $x^2 + x$ = 306

⇒ $x^2 + x$ – 306 = 0

This is a Quadratic Equation.

Do your self

(iii) and (iv)