

Chapter 04

QUADRATIC EQUATIONS

Procedure to find a Quadratic Equation by factorization with example:

Example: Solve $x^2 + 2x = 24$

Step-1: Make the given equation free from fractions and radicals and put it into the standard form,

$$ax^2 + bx + c = 0$$

$$\Rightarrow x^2 + 2x - 24 = 0$$

Step-2: Factorize $(ax^2 + bx + c)$ into two linear factors.

$$\Rightarrow x^2 + 6x - 4x - 24 = 0$$

$$\Rightarrow x(x+6) - 4(x+6) = 0$$

$$\Rightarrow (x+6)(x-4) = 0$$

Step-3: Put each linear factor equal to 'o'

($\because$ zero product rule)

$$\Rightarrow x + 6 = 0 \text{ (or) } x - 4 = 0$$

Step-4: Solve these linear equations and get 2 roots of the given quadratic equation.

$$\Rightarrow x = -6 \text{ (or) } x = 4$$

$\therefore$ Solution set = $\{-6, 4\}$.

NOTE: A quadratic equation cannot have more than two roots or two solving.