Ch - 4 Quadratic Equations

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Class10th Maths- chapter 4

This is problem 1(ii) of exercise 4.3

1. Find the roots of equation if they exist, by the method of completing the squares.

$$2x^2 + x - 4 = 0 \tag{1}$$

Solution:

$$a = 2, b = 1, c = -4 \tag{2}$$

Therefore, the formula to find out roots =

$$-b \pm [\frac{\sqrt{(b^2) - 4ac}}{2a}] \tag{3}$$

Hence, through this formula, the roots of the equation =

$$-1 \pm [\frac{\sqrt{(1^2) - 4 \times 2 \times -4}}{2 \times 2}] \tag{4}$$

$$\tag{5}$$

$$= -1 \pm [\frac{\sqrt{1 + 32}}{4}] \tag{6}$$

$$\tag{7}$$

$$= -1 \pm [\frac{\sqrt{33}}{4}] \tag{8}$$

$$\tag{9}$$

$$= -1 + [\frac{\sqrt{33}}{4}], -1 - [\frac{\sqrt{33}}{4}] \tag{10}$$

Therefore, the roots are =

$-1 + [\frac{\sqrt{33}}{4}] and - 1 - [\frac{\sqrt{33}}{4}]$