

Mathematics

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(Chapter – 2) (Polynomials)(Exemplar Problems)

(Class – IX)

Exercise 2.3

Question 26:

Factorise the following:

(i) $4x^2 + 20x + 25$

(ii) $9y^2 - 66yz + 121z^2$

(iii) $\left(2x + \frac{1}{3}\right)^2 - \left(x - \frac{1}{2}\right)^2$

Answer 26:

(i). Given that: $4x^2 + 20x + 25$

$$= (2x)^2 + 2 \times 2x \times 5 + 5^2$$

$$= (2x + 5)^2$$

$$[\because a^2 + 2ab + b^2 = (a + b)^2]$$

(ii). Given that: $9y^2 - 66yz + 121z^2$

$$= (3y)^2 - 2 \times 3y \times 11z + (11z)^2$$

$$= (3y - 11z)^2$$



$$[\because a^2 - 2ab + b^2 = (a - b)^2]$$

(iii). Given that: $\left(2x + \frac{1}{3}\right)^2 - \left(x - \frac{1}{2}\right)^2$

$$= \left[\left(2x + \frac{1}{3}\right) + \left(x - \frac{1}{2}\right)\right] \left[\left(2x + \frac{1}{3}\right) - \left(x - \frac{1}{2}\right)\right]$$

$$[\because a^2 - b^2 = (a - b)(a + b)]$$

$$= \left[3x + \frac{1}{3} - \frac{1}{2}\right] \left[x + \frac{1}{3} + \frac{1}{2}\right]$$

$$= \left[3x + \frac{2-3}{6}\right] \left[x + \frac{2+3}{6}\right]$$

$$= \left(3x - \frac{1}{6}\right) \left(x + \frac{5}{6}\right)$$

