

Mathematics

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

(Class – IX)

Exercise 2.3

Question 30:

If $a + b + c = 9$ and $ab + bc + ca = 26$, find $a^2 + b^2 + c^2$.

Answer 30:

Given that: $a + b + c = 9$ and $ab + bc + ca = 26$

Using the identity

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$, we have

$$(9)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$$

$$\Rightarrow 81 = a^2 + b^2 + c^2 + 2(26)$$

$$\Rightarrow 81 = a^2 + b^2 + c^2 + 52$$

$$\Rightarrow 81 - 52 = a^2 + b^2 + c^2$$

$$\Rightarrow a^2 + b^2 + c^2 = 29$$

