

# Mathematics

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

## Exercise 2.3

### Question 38:

Without finding the cubes, factorise

$$(x - 2y)^3 + (2y - 3z)^3 + (3z - x)^3$$

### Answer 38:

Given that:  $(x - 2y)^3 + (2y - 3z)^3 + (3z - x)^3$

Let  $a = x - 2y$ ,  $b = 2y - 3z$  and  $c = 3z - x$

$$\therefore a + b + c = x - 2y + 2y - 3z + 3z - x = 0$$

$$\Rightarrow (x - 2y)^3 + (2y - 3z)^3 + (3z - x)^3 = 3(x - 2y)(2y - 3z)(3z - x)$$

$$[\because a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)]$$

$$[\text{if } a + b + c = 0, a^3 + b^3 + c^3 = 3abc]$$

