

# Mathematics

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

(Class – X)

## Exercise 2.1

### Question 9:

If the zeroes of the quadratic polynomial  $ax^2 + bx + c$ , where  $c \neq 0$ , are equal then

- (A)  $c$  and  $a$  have opposite signs                      (B)  $c$  and  $b$  have opposite signs  
(C)  $c$  and  $a$  have same signs                              (D)  $c$  and  $b$  have the same signs

### Answer 9:

(C)  $c$  and  $a$  have same signs

### Solution:

Given that, the zeroes of the quadratic polynomial  $p(x) = ax^2 + bx + c$ , where  $c \neq 0$ , are equal.

Let  $\alpha$  and  $\beta$  be the zeroes of the polynomial  $p(x)$ .

If  $\alpha$  and  $\beta$  are equal, these must have same sign (both positive or both negative).

$$\Rightarrow \alpha\beta > 0$$

Product of zeroes

$$\alpha\beta = \frac{c}{a}$$

$$\Rightarrow \frac{c}{a} > 0 \quad [\because \alpha\beta > 0]$$

As  $\frac{c}{a} > 0$ , Which is only possible when  $a$  and  $c$  have the same signs.

