



# MATHS

## BOOKS - EDUCART PUBLICATION

### POLYNOMIALS

#### Objective Questions Multiple Choice Questions

1. The number of polynomials having zeroes as  $-2$  and  $5$  is

A. 1

B. 2

C. 3

D. more than 3

**Answer: D**



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**2.** If one of the zeroes of the cubic polynomial  $ax^3 + bx^2 + cx + d$  is zero, the product of the other two zeroes is :

A.  $-\frac{c}{a}$

B.  $\frac{c}{a}$

C. 0

D.  $-\frac{b}{a}$

**Answer: B**



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**3.** If one of the zeroes of the cubic polynomial

$x^3 + ax^2 + bx + c$  is  $-1$ , then find the

product of other two zeroes.

A.  $b-a+1$

B.  $b-a-1$

C.  $a-b+1$

D.  $a-b-1$

**Answer: A**



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**4.** IF  $\alpha, \beta$  are the zeroes of the polynomial

$5x^2 - 7x + 2$  then the sum of their reciprocal

is:

A.  $\frac{7}{2}$

B.  $\frac{7}{5}$

C.  $\frac{2}{5}$

D.  $\frac{14}{25}$

**Answer: A**



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5. The degree of the polynomial

$(x + 1)(x^2 - x - x^4 + 1)$  is:

A. 2

B. 3

C. 4

D. 5

**Answer: D**



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**6.** The zeroes of the quadratic polynomial

$x^2 + 99x + 127$  are:

A. both positive

B. both negative

C. one positive and one negative

D. both equal

**Answer: B**



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7. The zeroes of the quadratic polynomial

$$x^2 + kx + k \text{ where } k \neq 0,$$

A. cannot both be positive

B. cannot both be negative

C. are always unequal

D. are always equal

**Answer: A**



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**8.** 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 the same sign

D. c and b have same sign

**Answer: C**



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9. If one of the zeroes of a quadratic polynomial of the form " $x^2 + ax + b$ " is the negative of the other, then it

A. has no linear term and the constant term is negative

B. has no linear term and the constant term is positive

C. can have a linear term but the constant term is negative

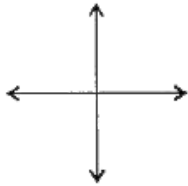
D. can have a linear but the constant term is positive

**Answer: A**

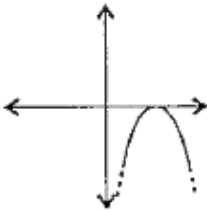


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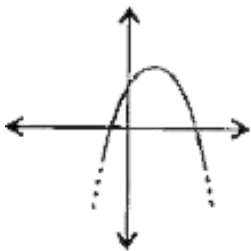
10. Which of the following is not the graph of a quadratic polynomial?



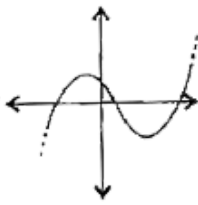
A.



B.



C.



D.

**Answer: D**



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## Objective Questions Fill In The Blanks

1. If one root of the equation  $(k - 1)x^2 - 10x + 3 = 0$  is the reciprocal of the other, then the value of  $k$  is \_\_\_\_\_ .



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2. The sum and the product of the zeros of a quadratic polynomial are 3 and  $-10$  respectively. The quadratic polynomial is



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3. If two of the zeros of the cubic polynomial  $ax^3 + bx^2 + cx + d$  are 0 then the third zero is



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4. Zeros of  $p(x) = x^2 - 2x - 3$  are



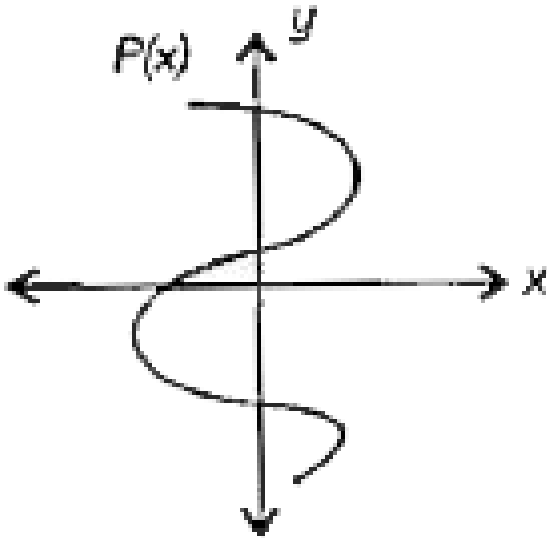
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5. If  $(x-2)$  is a factor of the polynomial  $x^3 - 6x^2 + ax - 8$  then the value of  $a$  is equal to.....



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6. The numbers of zeroes Of  $p(x)$  in the given figure is.....



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7. If the sum of the zeros of the quadratic polynomial  $kx^2 + 2x + 3k$  is equal to the

product of its zeros then  $k = ?$



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8. If  $\alpha$  and  $\beta$  are the zeros of the quadratic polynomial  $f(x) = x^2 - x - 4$ , find the value of  $\frac{1}{\alpha} + \frac{1}{\beta} - \alpha\beta$ .



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9. A monomial has.....terms



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## Objective Questions Very Short Answer Type Questions

1. From a quadratic polynomial, the sum and product of whose zeros are  $(-3)$  and  $2$  respectively.



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2. Find the value of  $k$  for which the roots of the equation  $3x^2 - 10x + k = 0$  are reciprocal of each other



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3. The degree of the polynomial  $(x + 1)(x^2 - x - x^4 + 1)$  is:



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4. If the product of two zeros of the polynomial  $f(x) = 2x^3 + 6x^2 - 4x + 9$  is , then its third zero is (a)  $\frac{3}{2}$  (b)  $-\frac{3}{2}$  (c)  $\frac{9}{2}$  (d)  $-\frac{9}{2}$



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5. IF  $\alpha$  and  $\beta$  are the zeroes of the polynomial  $p(x) = 4x^2 - 2x - 3$  find the value of  $\frac{1}{\alpha} + \frac{1}{\beta}$



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6. If one of the zeroes of polynomial  $P(x) = (k - 1)x^2 - kx + 1$  is 3 find the value of k



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## Short Answers Sa I Type Questions

1. Find the quadratic equation having roots  $\frac{2}{3}$  and 5.



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2. Find the roots of  $4x^2 + 7x - 36 = 0$  by splitting the middle term.



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3. If one of the zeros of the quadratic polynomial  $f(x) = 4x^2 - 8kx - 9$  is equal in magnitude but opposite in sign of the other, find the value of  $k$ .



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4. Find the quotient and remainder on division of  $x^3 + 2x^2 - 5x + 6$  by  $(x + 3)$



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5. If the zeroes of the polynomial  $x^3 - 2x^2 + x + 1$  are  $a-b$ ,  $a$  and  $a+b$  then find the values of  $a$  and  $b$



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6. What should be added to the polynomial  $x^2 - 5x + 4$ , so that 3 is the zero of the resulting polynomial? (a) 1 (b) 2 (c) 4 (d) 5



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7. If the zeroes of a polynomial  $x^2 - 8x + k = 0$  is the HCF of (6,12) then find the value of k



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8. Find the quadratic polynomial sum and product of whose zeroes are -1 and -20 respectively. Also, find the zeroes of the polynomial so obtained



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9. Find a quadratic polynomial whose zeros are reciprocals of the zero of the polynomial  $f(x) = ax^2 = bx + c, a \neq 0, c \neq 0$ .



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**10.** If the zeroes of the polynomial  $x^2 + px + q$  are double the value to the zeroes  $2x^2 - 5x - 3$  find the value of  $p$  and  $q$



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**11.** Find the value of  $k$  such that the equation  $x^2 - (k + 6)x + 2(2k - 1) = 0$  has sum of the roots equal to half of their product :



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**12.** Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

$$(v) 2x^2 + \frac{7}{2}x + \frac{3}{4}$$



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**13.** Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and

the coefficients of the polynomials

$$(vii) 2s^2 - (1 + 2\sqrt{2})s + \sqrt{2}$$



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**14.** Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

$$(x) 7y^2 - \frac{11}{3}y - \frac{2}{3}$$



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## Short Answers Sa Ii Type Questions

1. Find a quadratic polynomial whose zeros are 1 and  $-3$ . Verify the relation between the coefficients and zeros of the polynomial.



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2. If one root of the equation  $3x^2 - 8x + 2k + 1 = 0$  is seven times the other, find the two roots and the value of  $k$



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3. Without actually calculating the zeroes, from a quadratic polynomial whose zeroes are reciprocals of the zeroes of the polynomial  $5x^2 + 2x - 3$



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**Long Answer Type Questions**

1. Obtain other zeroes of the polynomial

$f(x) = 2x^4 + 3x^3 - 5x^2 - 9x - 3$  if two of

its zeroes are  $-\sqrt{3}$  and  $\sqrt{3}$



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2. Given that zeroes of cubic polynomial

$x^3 - 6x^2 + 3x + 10$  are of the form

$a, a+b, a+2b$  for some real numbers  $a$  and  $b$ , find

the values of  $a$  and  $b$  as well as zeroes of the

given polynomial.





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3. Given that  $\sqrt{2}$  is a zero of a polynomial  $6x^3 + \sqrt{2}x^2 - 10x - 4\sqrt{2}$ , find the other two zeroes.



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4. Given that  $x - \sqrt{5}$  is a factor of the cubic polynomial  $x^3 - 3\sqrt{5}x^2 + 13x - 3\sqrt{5}$ , find the other zeroes of the polynomial.



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5. For which values of  $a$  and  $b$ , the zeroes of  $q(x) = x^3 + 2x^2 + a$  are also the zeroes of the polynomial

$$p(x) = x^5 - x^4 - 4x^3 + 3x^2 + 3x + b?$$

Which zeroes of  $p(x)$  are not the zeroes of  $q(x)$ ?



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