MATHS

BOOKS - NCERT MATHS (ENGLISH)

POLYNOMIALS

Multiple Choice Questions

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1. 11. If -3 is one of the zeroes of the polynomial

$(k-1)x^2 + kx + 1$, find the value of k,

A. $\dfrac{4}{3}$

B. $\dfrac{-4}{3}$

C. $\dfrac{2}{3}$

D. $\dfrac{-2}{3}$

Answer: A

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2. A quadratic polynomial, whose zeroes are-3 and 4, is

A. $x^2 - x + 12$

B. $x^2 + x + 12$

C. $\dfrac{x^2}{2} - \dfrac{x}{2} - 6$

D. $2x^2 + 2x - 24$

Answer: C

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

A. $a = -7, b = -1$

B. $a = 5, b = -1$

C. $a = 2, b = -6$

D. $a = 0, b = -6$

Answer: D

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4. 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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5. If one of the zeroes of the cubic polynomial

$ax^3 + bx^2 + cx + d$ is zero, then the product

of other two zeroes is

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

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

C. 0

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

Answer: B

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6. 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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7. 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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8. The zeroes of the quadratic polynomial $x^2 + kx + k$ where $k \neq 0$, are : (1)cannot both

be positive (2)cannot both be negative (3)are always unequal (4)are always equal

A. cannot both be positive

B. cannot both be negative

C. are always unequal

D. are always equal

Answer: A

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

10. 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

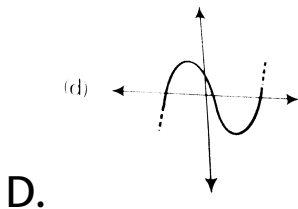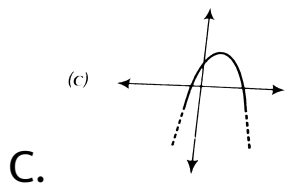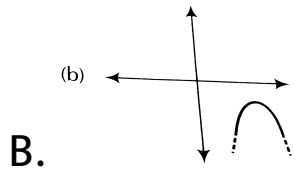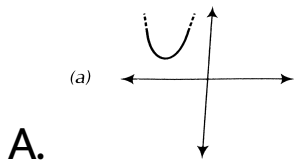C. can have a linear term but the constant

   term is negative

D. can have a linear term but the constant

   term is positive

Answer: A

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

A.
(a)

B.
(b)

C.
(c)

D.
(d)

Answer: D

Very Short Answer Type Questions

1. Answer the following and justify.

(i) can $x^2 - 1$ be the quotient on division of $x^6 + 2x^3 + x - 1$ by a polynomial in x of degree 5?

(ii) What will the quotient and remainder be on division of $ax^2 + bx + c$ by $px^3 + qx^2 + rx + s, p \neq 0$?

(iii) If on division of a polynomial $p(x)$ by a

polynomial $g(x)$, the quotient is zero, what is the relation between the degree of $p(x)$ and $g(x)$?

(iv) If on division of a non-zero polynomial $p(x)$ by a polynomial $g(x)$, the remainder is zero, what is the relation between the degrees of $p(x)$ and $g(x)$?

(v) Can the quadratic polynomial $x^2 + kx + k$ have equal zeroes for some odd integer $k > 1$?

2. Are the following statements 'True' or 'False'? Justify your answer.

(i) If the zeroes of a quadratic polynomial $ax^2 + bx + c$ are both positive, then a,b and c all have the same sign.

(ii) If the graph of a polynomial intersects the X-axis at only one point, it cannot be a quadratic polynomial.

(iii) If the graph of a polynomial intersects the X-axis at exactly two points, it need not ve a quadratic polynomial.

(iv) If two of the zeroes of a cubic polynomial are zero, then it does not have linear and

constant terms.

(v) If all the zeroes of a cubic polynomial are negative, then all the coefficients and the constant term of the polynomial have the same sign.

(vi) If all three zeroes of a cubic polynomial $x^3 + ax^2 - bx + c$ are positive, then atleast one of a,b and c is non-negative.

(vii) The only value of k for which the quadratic polynomial $kx^2 + x + k$ has equal zeroes is $\frac{1}{2}$.

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

(i) $4x^2 - 3x - 1$

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2. Find the zeroes of the following polynomials by factorisation method and verify the

relations between the zeroes and the coefficients of the polynomials

(ii) $3x^2 + 4x - 4$

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

(iii) $5t^2 + 12t + 7.$

4. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials (iv) $t^3 - 2t^2 - 15t.$

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

coefficients of the polynomials

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

6. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials (vi) $4x^2 + 5\sqrt{2}x - 3.$

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

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

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

coefficients of the polynomials

(viii) $v^2 + 4\sqrt{3}v - 15$

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

(ix) $y^2 + \dfrac{3}{2}\sqrt{5}y - 5$

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

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

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Long Answer Type Questions

1. For each of the following find a quadratic polynomial whose sum and product

respectively of the zeroes are as given. Also, find the zeroes of these polynomials by factorisation. (i) $\dfrac{-8}{3}, \dfrac{4}{3}$ (ii) $\dfrac{-3}{2\sqrt{5}}, -\dfrac{1}{2}$

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.

3. If $\sqrt{2}$ is a zero of $p(x) = 6x^3 + \sqrt{2}x^2 - 10x - 4\sqrt{2}$, find the remaining zeros

4. The value of k, if $x^2 + 2x + k$ is a factor of $2x^4 + x^3 - 14x^2 + 5x + 6$ is

5. If $x - \sqrt{5}$ is a factor of the cubic polynomial $x^3 - 3\sqrt{5}x^2 + 13x - 3\sqrt{5}$, then find all the zeroes of the polynomial.

6. 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 zeores of $p(x)$ are not the zeroes of $q(x)$?