



MATHEMATICS CLASS X CHAPTER – 2 POLYNOMIALS

Q.1. The graphs of $y = p(x)$ are given in following figure, for some polynomials $p(x)$. Find the number of zeroes of $p(x)$, in each case.

Q.2. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.

(i) $x^2 - 2x - 8$ (ii) $4s^2 - 4s + 1$ (iii) $6x^2 - 3 - 7x$

(iv) $4u^2 + 8u$ (v) $t^2 - 15$ (vi) $3x^2 - x - 4$

Q.3. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively.

(i) $\frac{1}{4}, -1$ (ii) $\sqrt{2}, \frac{1}{3}$ (iii) $0, \sqrt{5}$

(iv) $1, 1$ (v) $-\frac{1}{4}, \frac{1}{4}$ (vi) $4, 1$

Q.4. Divide the polynomial $p(x)$ by the polynomial $g(x)$ and find the quotient and remainder in each of the following:

(i) $p(x) = x^3 - 3x^2 + 5x - 3$, $g(x) = x^2 - 2$

(ii) $p(x) = x^4 - 3x^2 + 4x + 5$, $g(x) = x^2 + 1 - x$

(iii) $p(x) = x^4 - 5x + 6$, $g(x) = 2 - x^2$

Q.5. Check whether the first polynomial is a factor of the second polynomial by dividing the second polynomial by the first polynomial:



- (i) $t^2 - 3, 2t^4 + 3t^3 - 2t^2 - 9t - 12$
- (ii) $x^2 + 3x + 1, 3x^4 + 5x^3 - 7x^2 + 2x + 2$
- (iii) $x^3 - 3x + 1, x^5 - 4x^3 + x^2 + 3x + 1$

Q.6. Obtain all other zeroes of $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$.

Q.7. On dividing $x^3 - 3x^2 + x + 2$ by a polynomial $g(x)$, the quotient and remainder were $x - 2$ and $-2x + 4$, respectively. Find $g(x)$.

Q.8. Give examples of polynomial $p(x)$, $q(x)$, $r(x)$ and $r(x)$, which satisfy the division algorithm and

- (i) $\deg p(x) = \deg q(x)$
- (ii) $\deg q(x) = \deg r(x)$
- (iii) $\deg r(x) = 0$

Q.9. Verify that the numbers given alongside of the cubic polynomials below are their zeroes. Also verify the relationship between the zeroes and the coefficients in each case:

- (i) $2x^3 + x^2 - 5x + 2$; $\frac{1}{2}, 1, -2$
- (ii) $x^3 - 4x^2 + 5x - 2$; $2, 1, 1$

Q.10. Find a cubic polynomial with the sum, sum of the product of its zeroes taken two at a time, and the product of its zeroes as $2, -7, -14$ respectively.

Q.11. If the zeroes of polynomial $x^3 - 3x^2 + x + 1$ are $a-b, a, a+b$, find a and b .



Q.12. If two zeroes of the polynomial $x^4 - 6x^3 - 26x^2 + 138x - 35$ are $2 \pm \sqrt{3}$, find other zeroes.

Q.13. If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, the remainder comes out to be $x + a$, find k and a .

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