

Class-X Ch-2 Polynomials (Maths Assignment)

1. Divide x^3-3x^2-x+3 by $x+1$ and verify the division algorithm.
2. Verify that $3, -1, -\frac{1}{3}$ are the zeros of cubic poly. $P(x)=3x^3-5x^2-11x-3$ and then verify the relationship between the zeros and coeffs.
3. Find all the zeros of $2x^4-3x^3-3x^2+6x-2$ if two of its zeros are $\sqrt{2}$ and $-\sqrt{2}$.
4. On dividing $x^4+x^3-2x^2-5x-15$ by the poly. $g(x)$, the quotient and remainder were x^2-5 and zero resp, find $g(x)$
5. Give one example of poly $p(x), g(x), q(x)$ and $r(x)$ which satisfy the division algorithm

$$P(x)=g(x), q(x) \text{ and } r(x) \quad \text{deg } r(x) < \text{deg } g(x) \text{ and } \text{deg } p(x) = \text{deg } g(x) + 1$$

6. Obtain all the zeros of poly. $3x^3-5x^2-11x-3$
7. If the poly $6x^4+8x^3+17x^2+21x+7$ is divided by another polynomial $3x^2+4x+1$ the remainder comes out to be $(ax+b)$ find a and b .
8. If α, β are zeros of poly $4x^2+3x+7$ find the value (i) $\alpha^2+\beta^2$ (ii) $\frac{1}{\alpha}+\frac{1}{\beta}$.
9. If α, β are zeros of x^2-6x+k . What is value of k if $3\alpha+2\beta=20$

10. Find zeros of $x^2-4\sqrt{3}x-15$ by factorisation method & verify relation between zeros & coeffs. Of poly.

11. If α, β are zeros of poly $P(x) = x^2-5x+k$ such that $\alpha - \beta = 1$, find the value of k .

12. If α, β are zeros of poly $P(x)=2x^2+5x+k$. Satisfying the relation $\alpha^2+\beta^2+\alpha\beta = \frac{21}{4}$ then find the value of k for this is to be possible.

13. If α, β are zeros of quad. Poly $f(x)=x^2-px+q$ prove that

$$\frac{\alpha^2}{\beta^2} + \frac{\beta^2}{\alpha^2} = \frac{p^4}{q^2} - \frac{4p^4}{q^2} + 2$$

14. If α, β are zeros of quad. poly

$$f(x)=x^2-p(x+1)-c \text{ show that } (\alpha+1)(\beta+1)=1-c$$

15. If α, β are zeros of quad. poly

$$f(x)=x^2-3x-2 \text{ find a quad. Poly where zeros are } \frac{1}{2\alpha+\beta} \text{ and } \frac{1}{2\beta+\alpha}$$

16. Find the condition that zeros of poly

$$f(x)=x^3+3px^2+3qx+r \text{ may be in A.P}$$

17. Find zeros of x^3+5x^2-2x-6 if two of its zeros are $\pm\sqrt{2}$

18. Write the zeros of $4x^2-7$

19. Write the zeros of $100x^2 - 81$

Answers:

1. $Q = x^2 - 4x + 3, R = 0$

3. $\frac{1}{2}$ and 1

4. $x^2 + x + 3$

5. Any

6. $3, \pm\sqrt{\frac{3}{5}}$

7. $a=1, b=2$

8. $\frac{9}{6} - \frac{14}{4} = \frac{9-56}{16} = -\frac{47}{16}$ (i) $-\frac{47}{16}$ (ii) $-\frac{3}{7}$

9. $\alpha = 8, \beta = -2, k = -16$.

10. $x = -5\sqrt{3}, \sqrt{3}$

11. $k=6$

12. $k=2$

15. $f(x) = x^2 - \frac{9}{16}x + \frac{1}{16}$

16. $2p^2 - 3pq + r = 0$

17. $+\sqrt{2}, -\sqrt{2}, -3$

18. $\pm\frac{\sqrt{7}}{2}$

19. $\pm\frac{9}{10}$