

## 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  
 $P(x)=g(x), q(x)$  and  $r(x)$   $\deg r(x) < \deg g(x)$  and  $\deg p(x) = \deg g(x)+1$
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  $\alpha, \beta$  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  $\alpha, \beta$  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  $\alpha, \beta$  are zeros of poly  $P(x) = x^2-5x+k$  such that  $\alpha-\beta=1$ , find the value of  $k$ .
12. If  $\alpha, \beta$  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  $\alpha, \beta$  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  $\alpha, \beta$  are zeros of quad. poly  
 $f(x)=x^2-p(x+1)-c$  show that  $(\alpha+1)(\beta+1)=1-c$
15. If  $\alpha, \beta$  are zeros of quad. poly  
 $f(x)=x^2-3x-2$  find a quad. Poly where zeros are  $\frac{1}{2\alpha+\beta}$  and  $\frac{1}{2\beta+\alpha}$
16. Find the condition that zeros of poly  
 $f(x)=x^3+3px^2+3qx+r$  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.  $\pm\frac{9}{10}$