EduSahara™ Assignment

Name : Problems based on Zeros of Polynomial

Chapter : Polynomials

Grade : CBSE Grade X

1. Find the roots of the quadratic equation $(x^2-4x+4)=0$

   (i) $(2,2)$ (ii) $(3,1)$ (iii) $(3,2)$ (iv) $(4,1)$ (v) $(4,0)$

2. Find the roots of the quadratic equation $(x^2+2x+1)=0$

   (i) $(0,-1)$ (ii) $(-1,-1)$ (iii) $(0,-2)$ (iv) $(2,-3)$ (v) $(2,-2)$

3. Find the roots of the quadratic equation $(42x^2+2x-4)=0$

   (i) $(\frac{2}{9},-1)$ (ii) $(\frac{4}{7},-1)$ (iii) $(\frac{2}{7},(\frac{-1}{3}))$ (iv) $(\frac{2}{9},(\frac{-1}{3}))$

4. Find the roots of the quadratic equation $(45x^2-52x+15)=0$

   (i) $(\frac{3}{7},\frac{5}{7})$ (ii) $(1,\frac{5}{7})$ (iii) $(\frac{3}{5},\frac{5}{9})$ (iv) $(1,\frac{1}{3})$ (v) $(\frac{3}{7},\frac{5}{9})$

5. Find the quadratic equation with roots $((\frac{-8}{3}),(\frac{-8}{3}))$

   (i) $(3x^2+14x+16)=0$ (ii) $(9x^2+54x+80)=0$ (iii) $(15x^2+64x+64)=0$ (iv) $(3x^2+32x+64)=0$

   (v) $(9x^2+48x+64)=0$

6. Find the quadratic equation with roots $((\frac{-9}{4}),(\frac{-7}{4}))$

   (i) $(16x^2+56x+45)=0$ (ii) $(8x^2+50x+63)=0$ (iii) $(24x^2+82x+63)=0$ (iv) $(16x^2+64x+63)=0$

   (v) $(16x^2+72x+77)=0$

7. Find the quadratic equation with roots $(-1,-1)$

   (i) $(x^2+2x+1)=0$ (ii) $(x^2+4x+3)=0$ (iii) $(x^2+3x+2)=0$ (iv) $(x^2+x)=0$ (v) $(x^2-1)=0$

8. Find the quadratic equation with roots $(9,-9)$

   (i) $(x^2+2x-63)=0$ (ii) $(x^2-81)=0$ (iii) $(x^2-3x-54)=0$ (iv) $(x^2+x-72)=0$ (v) $(x^2-x-72)=0$

9. The sum of the roots of the quadratic equation $(x^2-8x+16)=0$ is

   (i) 11 (ii) 9 (iii) 8 (iv) 7 (v) 5

10. The sum of the roots of the quadratic equation $(x^2+6x+5)=0$ is

(i) -4 (ii) -6 (iii) -7 (iv) -5 (v) -8

11. The sum of the roots of the quadratic equation $(25x^2-10x+1)=0$ is

(i) $\frac{2}{7}$ (ii) $\frac{2}{3}$ (iii) $\frac{4}{5}$ (iv) 0 (v) $\frac{2}{5}$

12. The sum of the roots of the quadratic equation $(20x^2-22x-16)=0$ is

(i) $\frac{13}{10}$ (ii) $\frac{11}{10}$ (iii) $\frac{13}{12}$ (iv) $\frac{9}{8}$ (v) $\frac{9}{10}$

13. The product of the roots of the quadratic equation $(x^2+16x+64)=0$ is

(i) 62 (ii) 64 (iii) 65 (iv) 63 (v) 67

14. The product of the roots of the quadratic equation $(x^2+12x+32)=0$ is

(i) 31 (ii) 33 (iii) 34 (iv) 32 (v) 29

15. The product of the roots of the quadratic equation $(4x^2-16x+16)=0$ is

(i) 4 (ii) 2 (iii) 5 (iv) 6 (v) 3

16. The product of the roots of the quadratic equation $(-9x^2+45x-36)=0$ is

(i) 3 (ii) 4 (iii) 5 (iv) 7 (v) 1

17. Find the quadratic equation, the sum of whose roots is -12 and product is 36

(i) $(12x+36)=0$ (ii) $(x^2+12x+36)=0$ (iii) $(x^2+10x+36)=0$ (iv) $(2x^2+12x+36)=0$

(v) $(x^2+15x+36)=0$

18. Find the quadratic equation, the sum of whose roots is 0 and product is -36

(i) $(2x^2-36)=0$ (ii) $(x^2-34)=0$ (iii) $(-36)=0$ (iv) $(x^2-38)=0$ (v) $(x^2-36)=0$

19. Find the quadratic equation, the sum of whose roots is $(\frac{-2}{5})$ and product is $\frac{1}{25}$

(i) $(25x^2+13x+1)=0$ (ii) $(24x^2+10x+1)=0$ (iii) $(25x^2+10x+1)=0$ (iv) $(25x^2+8x+1)=0$

(v) $(26x^2+10x+1)=0$

20. Find the quadratic equation, the sum of whose roots is $\frac{7}{3}$ and product is -2

(i) $(10x^2-21x-18)=0$ (ii) $(8x^2-21x-18)=0$ (iii) $(9x^2-21x-18)=0$ (iv) $(9x^2-18x-18)=0$

(v) $(9x^2-23x-18)=0$

21. Find the roots of the quadratic equation $(-6x^2-3x+5)=0$

(i) $((-\frac{1}{4}-\frac{1}{12}\sqrt[4]{129}),(-\frac{1}{4}+\frac{1}{12}\sqrt{129}))$ (ii) $((-\frac{1}{4}-\frac{1}{12}\sqrt[4]{129}),(-\frac{1}{4}+\frac{43}{4}))$

(iii) $((\frac{1}{4}-\frac{1}{12}\sqrt{129}),(-\frac{3}{4}+\frac{1}{12}\sqrt{129}))$ (iv) $((-\frac{1}{4}-\frac{1}{12}\sqrt{129}),(-\frac{1}{4}+\frac{1}{12}\sqrt{129}))$

(v) $((\frac{1}{4}-\frac{1}{12}\sqrt{129}),(-\frac{1}{4}+\frac{43}{4}))$

22. Find the value of k such that $kx^4 + 14x^3 + 18x^2 + 10x + 2$ is exactly divisible by $(x+1)$

(i) 1 (ii) 3 (iii) 5 (iv) 7 (v) 4

23. If 5 and $(\frac{-1}{2})$ are the zeros of the polynomial $f(x)=8x^4 - 24x^3 + bx^2 + ax$, find the value of a and b

(i) -29 , -74 (ii) -30 , -73 (iii) -75 , -31 (iv) -73 , -29 (v) -30 , -74

24. Find the value of a and b such that $ax^4 + bx^3 - 8x^2 - 8x$ is exactly divisible by (x^2-4)

(i) 2 , 2 (ii) 3 , 3 (iii) 2 , 3 (iv) 3 , 2 (v) 1 , 1

25. Factorize and divide $(900x^4-549x^2+81) \div (30x^2+3x-9)$

(i) $(29x^2-3x-9)$ (ii) $(31x^2-3x-9)$ (iii) $(33x^2-3x-9)$ (iv) $(28x^2-3x-9)$ (v) $(30x^2-3x-9)$

26. Factorize and divide $(-6x^4+44x^3-14x^2-216x+72) \div (-x^2+9x-18)$

(i) $(6x^2+14x+4)$ (ii) $(6x^2+10x-4)$ (iii) (x^2-x-6) (iv) $(6x^2-10x-4)$ (v) $(6x^2-14x+4)$

27. If 2 is the zero of the polynomial $f(x)=9x^2 - 6x + k$, find k

(i) -23 (ii) -25 (iii) -21 (iv) -27 (v) -24

28. If the polynomial $f(x)=kx^2 - 16x - 6$ is exactly divisible by $(3x+1)$, find k

(i) 6 (ii) 5 (iii) 7 (iv) 3 (v) 9

29. If the polynomial $ax^4 - 7x^3 - 6x^2 + bx + 4$ is divided by $(x-5)$, it leaves a remainder 264 . If it is divided by $(x-3)$, it leaves a remainder -56 . Find the value of a and b

(i) 3 , 7 (ii) 2 , 7 (iii) 6 , 1 (iv) 8 , 3 (v) 2 , 8

30. If the polynomials $-3x^2 + ax + 21$ and $ax^2 - 6x - 15$ leave the same remainder when divided by $(x+2)$, find the value of a

(i) 2 (ii) 4 (iii) 3 (iv) 1 (v) (-1)

31. Which of the following are true?

a) Zero of a polynomial and zero polynomial are synonymous
b) If (x - a) is a factor of f(x), then f(a) = 0
c) Zero of a polynomial and root of the polynomial are synonymous
d) A linear polynomial in one variable has only one root
e) If (x + a) is a factor of f(x), then f(a) = 0
f) Zero of a polynomial is the value of the variable for which the polynomial value is zero
g) A polynomial of degree n has atmost n zeros

(i) {a,f,g} (ii) {e,c} (iii) {a,b} (iv) {b,c,d,f,g} (v) {a,e,d}

32. Which of the following are true?

a) A binomial has two and only two terms
b) Degree of zero polynomial is zero
c) A binomial may have degree 3
d) πr^2 is a monomial
e) Every polynomial is a binomial

(i) {a,c,d} (ii) {b,e,d} (iii) {e,c} (iv) {b,a,c} (v) {b,a}

33. Which of the following is a factor of $27x^5y^4z^2$?

(i) $x^2y^2z^3$ (ii) $x^6y^2z^2$ (iii) $x^2y^2z^2$ (iv) $x^5y^2z^3$ (v) $x^2y^5z^2$

34. Which of the following is not a factor of $12x^4yz^4$?

(i) $6x^4y^2z^4$ (ii) $6x^4yz^3$ (iii) $6xz^3$ (iv) $6x^4z^4$ (v) $6x^3yz^4$

35. Which of the following is a factor of $(6x^4+y^3z^3)$?

(i) y^3z^3 (ii) $2y^2$ (iii) no factors (iv) $2xz$ (v) $6x^4$

36. Which of the following is an irreducible factor of $2x^5y^3z^4$?

(i) x^2y (ii) xz^3 (iii) $x^2y^3z^3$ (iv) y^3z (v) x

37. Which of the following is not an irreducible factor of (x^2y+xy^2+xy) ?

(i) $(x+y+1)$ (ii) x (iii) xy (iv) y

38. If (x^2-1) is a factor of $ax^4 + bx^3 + cx^2 + dx + e$, which of the following are true ?

a) a + b + c = d + e
b) a + c + e = 0
c) a + b + c + d + e = 0
d) a + b + c = 0
e) d + e = 0
f) b + d = 0

(i) {d,c} (ii) {e,a,f} (iii) {d,b,c} (iv) {b,c,f} (v) {a,b}

39. Which of the following are true ?

a) If p(a) = 0, then (x + a) perfectly divides p(x)
b) If the degree of p(x) is less then the degree of d(x), we should not divide p(x) with d(x)
c) If p(x) is divided by (x - a), the remainder is p(a)
d) Division of a polynomial with another polynomial stops when the degree of the remainder equals the degree of the divisor

(i) {d,c} (ii) {a,c,b} (iii) {b,c} (iv) {a,b} (v) {a,d,b}

40. In which of the cases, $g(x)$ is a factor of $f(x)$?

(i) $f(x)=(3x^3+17x^2-52x+32), g(x)=(2x+3)$ (ii) $f(x)=(-6x^3-49x^2+4x+96), g(x)=(-x+8)$

(iii) $f(x)=(x^3-8x^2-x+8), g(x)=(x+1)$ (iv) $f(x)=(3x^3-4x^2-192x+256), g(x)=(-x+1)$

(v) $f(x)=(-x^3-8x^2+x+8), g(x)=(-3x+4)$

41. If the polynomial $bx^2 + ax - 10$ is divided by $(x-4)$, it leaves a remainder 170. If it is divided by $(2x+4)$, it leaves a remainder 8. Find the value of a and b

(i) $9, 9$ (ii) $10, 9$ (iii) $10, 10$ (iv) $9, 10$ (v) $8, 8$

Assignment Key

1) (i)	2) (ii)	3) (iii)	4) (iii)	5) (v)	6) (iv)
7) (i)	8) (ii)	9) (iii)	10) (ii)	11) (v)	12) (ii)
13) (ii)	14) (iv)	15) (i)	16) (ii)	17) (ii)	18) (v)
19) (iii)	20) (iii)	21) (iv)	22) (v)	23) (v)	24) (i)
25) (v)	26) (ii)	27) (v)	28) (i)	29) (ii)	30) (i)
31) (iv)	32) (i)	33) (iii)	34) (i)	35) (iii)	36) (v)
37) (iii)	38) (iv)	39) (iii)	40) (iii)	41) (i)	