

EduSahara™ Learning Center Assignment**Grade : Class X, CBSE****Chapter : Polynomials****Name : Problems based on Zeros of Polynomial**

1. Find the roots of the quadratic equation $(x^2 - 10x + 9) = 0$

(i) $(10, 0)$ (ii) $(10, 1)$ (iii) $(12, -1)$ (iv) $(9, 1)$ (v) $(12, 0)$

2. Find the roots of the quadratic equation $(x^2 + 16x + 64) = 0$

(i) $(-5, -9)$ (ii) $(-7, -8)$ (iii) $(-5, -10)$ (iv) $(-7, -9)$ (v) $(-8, -8)$

3. Find the roots of the quadratic equation $(20x^2 - 20x) = 0$

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

4. Find the roots of the quadratic equation $(30x^2 + 14x - 4) = 0$

(i) $(\frac{3}{5}, -2)$ (ii) $(\frac{1}{7}, -2)$ (iii) $(\frac{3}{5}, (\frac{-4}{3}))$ (iv) $(\frac{1}{7}, (\frac{-2}{3}))$ (v) $(\frac{1}{5}, (\frac{-2}{3}))$

5. Find the quadratic equation with roots $(\frac{2}{7}, \frac{2}{7})$

(i) $(49x^2 - 42x + 8) = 0$

(ii) $(49x^2 - 28x + 4) = 0$

(iii) $(63x^2 - 32x + 4) = 0$

(iv) $(35x^2 - 24x + 4) = 0$

(v) $(7x^2 - 2x) = 0$

6. Find the quadratic equation with roots $(\frac{-5}{7}, \frac{4}{5})$

(i) $(35x^2 - 3x - 20) = 0$

(ii) $(5x^2 + x - 4) = 0$

(iii) $(35x^2 - 17x - 30) = 0$

(iv) $(49x^2 + 7x - 20) = 0$

7. Find the quadratic equation with roots $(-5, -5)$

(i) $(x^2 + 9x + 20) = 0$

(ii) $(x^2 + 7x + 10) = 0$

(iii) $(x^2 + 11x + 30) = 0$

(iv) $(x^2 + 12x + 35) = 0$

(v) $(x^2 + 10x + 25) = 0$

8. Find the quadratic equation with roots $(-3, -7)$

(i) $(x^2 + 10x + 21) = 0$

(ii) $(x^2 + 12x + 35) = 0$

(iii) $(x^2 + 7x + 12) = 0$

(iv) $(x^2 + 11x + 28) = 0$

(v) $(x^2 + 9x + 18) = 0$

9. The sum of the roots of the quadratic equation $x^2 = 0$ is

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

10. The sum of the roots of the quadratic equation $(x^2 + 11x + 24) = 0$ is

(i) -12 (ii) -8 (iii) -13 (iv) -10 (v) -11

11. The sum of the roots of the quadratic equation $(4x^2 + 28x + 49) = 0$ is

(i) -7 (ii) -5 (iii) -6 (iv) -8 (v) -9

12. The sum of the roots of the quadratic equation $(-9x^2 - 12x - 3) = 0$ is

- (i) $(-\frac{4}{3})$ (ii) $(-\frac{6}{5})$ (iii) -2 (iv) $(-\frac{2}{3})$
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13. The product of the roots of the quadratic equation $(x^2 - 8x + 16) = 0$ is

- (i) 15 (ii) 13 (iii) 19 (iv) 16 (v) 17
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14. The product of the roots of the quadratic equation $(x^2 + 12x + 32) = 0$ is

- (i) 30 (ii) 32 (iii) 33 (iv) 31 (v) 34
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15. The product of the roots of the quadratic equation $(49x^2 + 28x + 4) = 0$ is

- (i) $\frac{4}{47}$ (ii) $\frac{6}{49}$ (iii) $\frac{4}{51}$ (iv) $\frac{4}{49}$ (v) $\frac{2}{49}$
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16. The product of the roots of the quadratic equation $(-72x^2 - 39x + 21) = 0$ is

- (i) $(-\frac{5}{24})$ (ii) $(-\frac{7}{24})$ (iii) $(-\frac{3}{8})$ (iv) $(-\frac{7}{26})$ (v) $(-\frac{7}{22})$
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17. Find the quadratic equation, the sum of whose roots is 18 and product is 81

(i) $(2x^2 - 18x + 81) = 0$

(ii) $(x^2 - 18x + 81) = 0$

(iii) $(x^2 - 20x + 81) = 0$

(iv) $(x^2 - 15x + 81) = 0$

(v) $(-18x + 81) = 0$

18. Find the quadratic equation, the sum of whose roots is -7 and product is 12

(i) $(x^2 + 7x + 12) = 0$

(ii) $(x^2 + 9x + 12) = 0$

(iii) $(x^2 + 4x + 12) = 0$

$$(iv) (2x^2 + 7x + 12) = 0$$

$$(v) (7x + 12) = 0$$

19. Find the quadratic equation, the sum of whose roots is $\frac{16}{7}$ and product is $\frac{64}{49}$

$$(i) (48x^2 - 112x + 64) = 0$$

$$(ii) (49x^2 - 109x + 64) = 0$$

$$(iii) (49x^2 - 114x + 64) = 0$$

$$(iv) (50x^2 - 112x + 64) = 0$$

$$(v) (49x^2 - 112x + 64) = 0$$

20. Find the quadratic equation, the sum of whose roots is -3 and product is 2

$$(i) (29x^2 + 84x + 56) = 0$$

$$(ii) (27x^2 + 84x + 56) = 0$$

$$(iii) (28x^2 + 87x + 56) = 0$$

$$(iv) (28x^2 + 81x + 56) = 0$$

$$(v) (28x^2 + 84x + 56) = 0$$

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

$$(i) \left(\left(\frac{3}{2} - \frac{1}{2} \sqrt{5} \right), \left(\frac{3}{2} + \frac{1}{2} \sqrt{5} \right) \right)$$

$$(ii) \left(\left(\frac{5}{2} - \frac{1}{2} \sqrt{5} \right), \left(\frac{3}{2} + \frac{5}{2} \right) \right)$$

$$(iii) \left(\left(\frac{5}{2} - \frac{1}{2} \sqrt{5} \right), \left(\frac{1}{2} + \frac{1}{2} \sqrt{5} \right) \right)$$

$$(iv) \left(\left(\frac{3}{2} - \frac{1}{2} \sqrt{5} \right), \left(\frac{3}{2} + \frac{5}{2} \right) \right)$$

$$(v) \left(\left(\frac{3}{2} - \frac{1}{2} \sqrt{5} \right), \left(\frac{3}{2} + \frac{1}{2} \sqrt{5} \right) \right)$$

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- Find the value of k such that $8x^4 - 36x^3 + kx^2 - 12x$
22. is exactly divisible by $(x - 3)$

(i) 40 (ii) 43 (iii) 39 (iv) 37 (v) 41

- If 2 and $(-\frac{3}{2})$ are the zeros of the polynomial
23. $f(x) = bx^4 + ax^3 - 68x^2 + 36x + 72$, find the value of a and b

(i) -16 , 17

(ii) -16 , 16

(iii) -15 , 16

(iv) 17 , -15

(v) 15 , -17

- Find the value of a and b such that
24. $x^4 - 3x^3 - 21x^2 + bx + a$ is exactly divisible by $(x^2 - x - 20)$

(i) 60 , 43

(ii) 42 , 59

(iii) 60 , 44

(iv) 61 , 43

(v) 44 , 61

- Factorize and divide
25. $(144x^4 - 964x^2 + 400) \div (12x^2 - 22x - 20)$
- (i) $(14x^2 + 22x - 20)$ (ii) $(12x^2 + 22x - 20)$
- (iii) $(13x^2 + 22x - 20)$ (iv) $(10x^2 + 22x - 20)$
- (v) $(11x^2 + 22x - 20)$
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- Factorize and divide
26. $(16x^4 - 4x^3 - 430x^2 - 692x - 240) \div (-x^2 + 2x + 24)$

(i) $(-16x^2 + 28x - 10)$ (ii) $(-16x^2 + 12x + 10)$

(iii) $(-16x^2 - 12x + 10)$ (iv) $(-16x^2 - 28x - 10)$

(v) $(-4x^2 - 18x - 8)$

27. If -1 is the zero of the polynomial $f(x) = kx^2 - 3x - 6$, find k

(i) 1 (ii) 2 (iii) 4 (iv) 6 (v) 3

28. If the polynomial $f(x) = kx^2 + 9x - 6$ is exactly divisible by $(3x + 6)$, find k

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

If the polynomial $bx^4 + ax^3 - 37x^2 - 43x + 30$ is divided by $(x - 4)$, it leaves a remainder 546 . If it is divided by $(x - 2)$, it leaves a remainder -108 . Find the value of a and b

(i) 4, 5

(ii) 5, 4

(iii) 3, 3

(iv) 5, 5

(v) 4, 4

30. If the polynomials $ax^2 - x + 19$ and $-2x^2 + ax + 11$ leave the same remainder when divided by $(x + 2)$, find the value of a

(i) (-1) (ii) (-5) (iii) (-4) (iv) (-2) (v) (-3)

31. Which of the following are true?

- a) A polynomial of degree n has at most n zeros
 - 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) Zero of a polynomial and zero polynomial are synonymous
 - e) A linear polynomial in one variable has only one root
 - f) If $(x + a)$ is a factor of $f(x)$, then $f(a) = 0$
 - g) Zero of a polynomial is the value of the variable for which the polynomial value is zero
- (i) {f,b} (ii) {d,e,g} (iii) {d,f,c} (iv) {a,b,c,e,g} (v) {d,a}

32. Which of the following are true?

- a) A binomial may have degree 3
 - b) A binomial has two and only two terms
 - c) Degree of zero polynomial is zero
 - d) πr^2 is a monomial
 - e) Every polynomial is a binomial
 - (i) {a,b,d} (ii) {c,a,b} (iii) {c,a} (iv) {c,e,d} (v) {e,b}
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33. Which of the following is a factor of $14x^3y^3z^3$?

- (i) $2xz^4$ (ii) $2x^3z^4$ (iii) x^4 (iv) $2xy^4$ (v) $2x$
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34. Which of the following is not a factor of $39x^4yz^3$?

- (i) x^4z^3 (ii) 1 (iii) x^4yz^2 (iv) $x^4y^2z^4$ (v) x^3yz^3
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35. Which of the following is a factor of $(4x^2 + y^2z)$?

- (i) no factors (ii) $4x^2$ (iii) $4y$ (iv) $4xz$ (v) y^2z
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36. Which of the following is an irreducible factor of $4x^2y^2z^4$?

- (i) xz^4 (ii) $x^2y^2z^4$ (iii) y^2z (iv) x^2y (v) z
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37. Which of the following is not an irreducible factor of $(x^2y + xy^2 + xy)$?

- (i) $(x + y + 1)$ (ii) x (iii) y (iv) xy
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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) $a + b + c + d + e = 0$
 - c) $a + b + c = 0$
 - d) $b + d = 0$
 - e) $d + e = 0$
 - f) $a + c + e = 0$
 - (i) {c,d} (ii) {e,a,f} (iii) {a,b} (iv) {c,b,d} (v) {b,d,f}
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39. Which of the following are true ?

- a) If $p(x)$ is divided by $(x - a)$, the remainder is $p(a)$
 - b) Division of a polynomial with another polynomial stops when the degree of the remainder equals the degree of the divisor
 - c) If the degree of $p(x)$ is less than the degree of $d(x)$, we should not divide $p(x)$ with $d(x)$
 - d) If $p(a) = 0$, then $(x + a)$ perfectly divides $p(x)$
- (i) $\{d, c\}$ (ii) $\{b, d, a\}$ (iii) $\{a, c\}$ (iv) $\{b, a\}$ (v) $\{b, c, a\}$
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40. In which of the cases, $g(x)$ is a factor of $f(x)$?

- (i) $f(x) = (-3x^3 - 16x^2 + 43x + 56)$, $g(x) = (-2x + 5)$
 - (ii) $f(x) = (3x^3 - 14x^2 + 7x + 24)$, $g(x) = (x + 1)$
 - (iii) $f(x) = (2x^3 + 3x^2 - 62x + 105)$, $g(x) = (-3x + 8)$
 - (iv) $f(x) = (6x^3 + 11x^2 - 177x + 280)$, $g(x) = (2x + 7)$
 - (v) $f(x) = (-4x^3 - 32x^2 + 7x + 245)$, $g(x) = (-x + 3)$
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If the polynomial $bx^2 + 10x + a$ is divided by $(x - 5)$,

41. it leaves a remainder 128. If it is divided by $(x - 3)$,

it leaves a remainder 60. Find the value of a and b

- (i) 4, 4
 - (ii) 3, 3
 - (iii) 2, 2
 - (iv) 3, 4
 - (v) 4, 3
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Assignment Key

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