

Q1. 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 $g(x)$.
Ans. $x^2 - x + 1$

Q2. On dividing $3x^3 + 4x^2 + 5x - 13$ by a polynomial $g(x)$, the quotient and remainder were $3x + 10$ and $16x - 43$ respectively. Find the polynomial $g(x)$.
Ans. $x^2 - 2x + 3$

Q3. Find the zeroes of the polynomial $x^2 - 3$ and verify the relationship between the zeroes and the coefficients.
Ans. $\sqrt{3}, -\sqrt{3}$

Q4. Find the zeroes of the polynomial $t^2 - 15$ and verify the relationship between the zeroes and the coefficients.
Ans. $\sqrt{15}, -\sqrt{15}$

Q5. Find the zeroes of the quadratic polynomial $3x^2 - 75$ and verify the relationship between the zeroes and the coefficients.
Ans. $5, -5$

Q6. Find a quadratic polynomial, the sum and product of zeroes are -8 and 12 respectively. Hence find the zeroes.
Ans. $x^2 + 8x + 12 = 0$; $-2, -6$

Q7. Find a quadratic polynomial where sum and product of zeroes are $\sqrt{2}$ and $\frac{1}{3}$ respectively.
Ans. $\frac{1}{3}(3x^2 - 3\sqrt{2}x + 1)$

Q8. If α and β are the zeroes of the polynomial such that $\alpha + \beta = -6$ and $\alpha\beta = 5$, then find the polynomial.
Ans. $x^2 + 6x + 5$

Q9. Find a quadratic polynomial whose zeroes are -3 and 4 .
Ans. $x^2 - x - 12$

Q10. Find a quadratic polynomial whose zeroes are -2 and -5 .
Ans. $x^2 + 7x + 10$

Q11. Form a quadratic polynomial whose zeroes are $3 + \sqrt{2}$ and $3 - \sqrt{2}$.
Ans. $x^2 - 6x + 7$

Q12. Find a quadratic polynomial whose zeroes are $5 + \sqrt{19}$ and $5 - \sqrt{19}$.
Ans. $x^2 - 10x + 6$

Q13. If α and β are the zeroes of the $p(x) = 6x^2 - 7x - 3$, then form a quadratic polynomial whose zeroes are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$.
Ans. $\frac{k}{3}(3x^2 + 7x - 6)$

Q14. Find the zeroes of the quadratic polynomial $\sqrt{3}x^2 - 8x + 4\sqrt{3}$.
Ans. $2\sqrt{3}, \frac{2}{\sqrt{3}}$

Q15. Find the zeroes of the quadratic polynomial $4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$.
Ans. $\frac{-2}{\sqrt{3}}, \frac{\sqrt{3}}{4}$

Q16. Divide $3x^2 + 5x - 1$ by $x + 2$ and verify division algorithm.

Q17. Divide $3x^3 + x^2 + 2x + 5$ by $1 + 2x + x^2$ and verify division algorithm.

Q18. Divide $3x^2 - x^3 - 3x + 5$ by $x - 1 - x^2$ and verify division algorithm.

Q19. Check whether $x - 1$ is the factor of the polynomial $x^3 - 8x^2 + 19x - 12$. Verify division algorithm.

Q20. Check whether $g(x) = x^2 - 3x + 2$ is a factor of the polynomial $f(x) = x^4 - 2x^3 - x + 2$.

Q21. If one root of $5x^2 + 13x + k = 0$ is the reciprocal of the other root, then find the value of k .
Ans. $K = 5$

Q22. If one zero of the polynomial $p(x) = 5x^2 + 13x - a$ is reciprocal of other, then find the value of a .
Ans. $a = -5$

Q23. If one zero of the polynomial $(a^2 + 9)x^2 + 13x + 6a$ is reciprocal of other, find the value of a .
Ans. $a = 3$

Q24. If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is 4 , find the value of a .
Ans. $a = -\frac{3}{2}$

Q25. If the product of zeroes of the polynomial $p(x) = ax^3 - 6x^2 + 11x - 6$ is 4 , find the value of a .
Ans. $a = \frac{3}{2}$

