

1. Using factor theorem, show that $x^2 + 5x + 6$ is a factor of $2x^3 + 11x^2 + 17x + 6$.
2. Factorise: $x^3 + 13x^2 + 32x + 20$
3. The polynomial $p(x) = x^4 - 2x^3 + 3x^2 - ax + 3a - 7$ when divided by $(x + 1)$ leaves remainder 19. Find the value of a . Also, find the remainder when $p(x)$ is divided by $(x + 2)$.
4. Evaluate: $\frac{(x^2-y^2)^3+(y^2-z^2)^3+(z^2-x^2)^3}{(x-y)^3+(y-z)^3+(z-x)^3}$
5. If $x = 2 + \sqrt{3}$, find $x - \frac{1}{x}$ and $x^2 + \frac{1}{x^2}$
6. Factorise the following: $(a^2 - 2a)^2 - 23(a^2 - 2a) + 120$
7. Express $(a - b)^3 + (b - c)^3 + (c - a)^3$ as product of its factors.
8. For what value of m , is the polynomial $3x^3 + 2mx^2 + 3x + 6$ exactly divisible by $(x + 2)$? Hence factorise the polynomial.
9. If $x = \frac{1}{\sqrt{5}-2}$, find the value of $x^3 - 3x^2 - 5x + 3$
10. Using factor theorem, factorise the polynomial $x^3 - 6x^2 + 11x - 6$.