

1. Using the remainder theorem, factorise the polynomial $2y^3 + y^2 - 2y + 1$
2. Factorise: $27a^3 + \frac{1}{64b^3} + \frac{27a^2}{4b} + \frac{9a}{16b^2}$
3. Factorise: $2x^2 - 7x - 15$
4. Without actually calculating the cubes, find the value of $45^3 - 25^3 - 20^3$.
5. Factorise: $250x^3 - 432y^3$
6. Factorise: $x^2 + 3\sqrt{3}x - 30$
7. Find the value of k , if $(2x - 3)$ is a factor of $2x^3 + kx^2 + x + 12$.
8. If $x + y + z = 10$ and $x^2 + y^2 + z^2 = 40$, find $xy + yz + zx$ and $x^3 + y^3 + z^3 - 3xyz$.
9. The polynomial $p(x) = x^4 - 2x^3 + 3x^2 - ax + b$ when divided by $(x + 1)$ and $(x - 1)$ leaves the remainders 19 and 5 respectively. Find a and b . Hence find remainder when $p(x)$ is divided by $(x + 2)$.
10. Factorise: $(a^2 - 2a)^2 + 23(a^2 - 2a) + 120$