

1. If $(x - a)$ is a factor of the polynomial $x^3 - mx^2 - 2nax + na^2$, prove that $a = m + n$, if $a \neq 0$.
2. Without actual division, show that $f(x) = 2x^4 - 6x^3 + 3x^2 + 3x - 2$ is exactly divisible by $x^2 - 3x + 2$.
3. Find the quotient and remainder when $6x^4 + 11x^3 + 13x^2 - 3x + 27$ is divided by $(3x + 4)$. Also check the remainder obtained by using remainder theorem.
4. Simplify: $(2x + y - z)^2 - (2x + y + z)^2$
5. If $(x + 1)$ is a factor of $bx^3 + x^2 - 2x + 4b - 9$, find the value of b ?
6. Factorise: $x^2 + 3\sqrt{2}x + 4$
7. For what value of p , the polynomial $2x^3 + px^2 + 11x + p + 3$ is exactly divisible by $(2x - 1)$.
8. Factorise: $64x^3 + 125y^3 - 64z^3 + 240xyz$
9. If the polynomials $p(x) = 2x^3 + bx^2 + 3x - 5$ and $q(x) = x^3 + x^2 - 4x + b$ leave the same remainder when divided by $(x - 2)$, prove that $b = \frac{-13}{3}$
10. If both $(x - 2)$ and $(x - \frac{1}{2})$ are factors of $px^2 + 5x + r$, show that $p = r$.