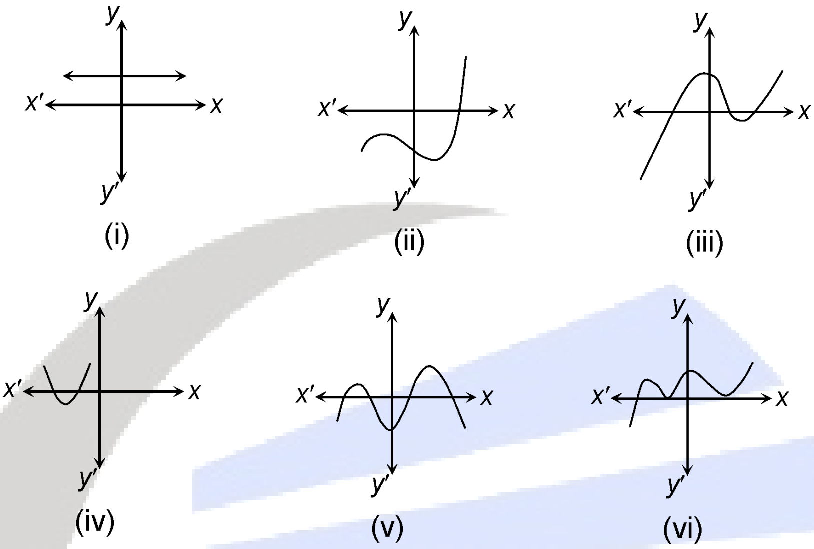
1. The graphs of $y = p(x)$ are given below for some polynomial $p(x)$. Find the number of zeros of $p(x)$ in each case.



2. Draw the graph of the polynomial $f(x) = x^2 + 2x - 3$.

3. Draw the graph of the polynomial $y = x^3 - 4x$. Read off zeros from the graph.

4. Find the zeros of the following quadratic polynomials and verify the relationship between the zeros and their coefficients.

   (i) $x^2 - 2x - 8$ (ii) $6x^2 - 3$ (iii) $4u^2 + 8u$

5. Form a cubic polynomial with zeros α = 3, β = 2, γ = –1 .

6. Find a quadratic polynomial whose zeros are 2 and –3.

7. Verify that the numbers given alongside of the cubic polynomials below are the zeros. Also verify the relationship between the zeros and co-efficients in each case.

   $x^3 - 4x^2 + 5x - 2$; 2, 1, 1

8. Apply the division algorithm to find the quotient and remainder on dividing $p(x)$ by $g(x)$ as given below.

   $p(x) = x^3 - 3x^2 + 5x - 3$, $g(x) = x^2 - 2$

9. If $(x - a)$ is the factor of the polynomial $x^3 - mx^2 - 2nax + na^2$, prove that $a = m + n$ and $a \neq 0$.

10. What must be subtracted from $p(x) = 6x^4 + 7x^3 + 26x^2 - 25x + 25$ so that the resulting polynomial is exactly divisible by $g(x) = 3x^2 - x + 4$?

11. Find all the zeros of $2x^4 - 3x^3 - 3x^2 + 6x - 2$ if you know that two of its zeros are $\sqrt{2}$ and $-\sqrt{2}$.