# Finding Roots of a Polynomial

1. $f(x) = x^3 - 7x + 6$.
   (a) Show that $(x - 2)$ is a factor of $f(x)$.
   (b) Hence solve the equation $f(x) = 0$.

2. Show that 4 is a root of the equation $x^3 + 2x^2 - 15x - 36 = 0$ and find the other roots of this equation.

3. Show that 2 is a zero of $2x^3 - 3x^2 - 3x + 2 = 0$ and find the other zeros.

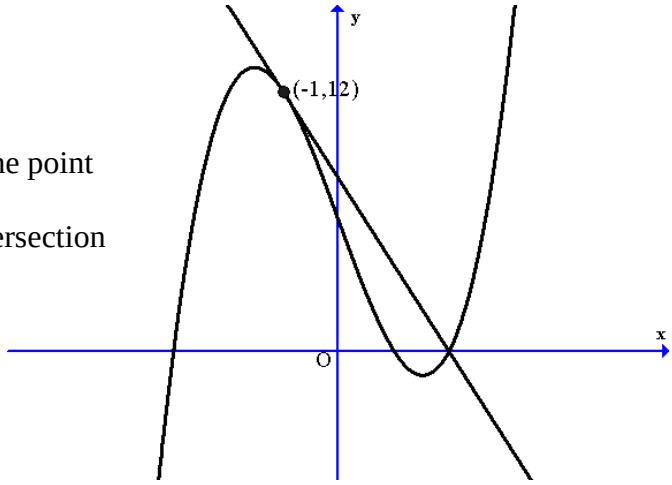
4. Find the roots of $x^3 + 6x^2 + 3x - 10 = 0$.

5. $y = x^3 - 3x - 2$ . Find the coordinates of the points where this curve cuts the x-axis.

6. Find the points where the curve $y = x^3 - 2x^2 - x + 2$ cuts
   (i) the y-axis (ii) the x-axis.

7. The line $y = 4x + 10$ and the curve $y = x^3 + 6x^2 + 3x - 20$ intersect at 3 points. One of these points is (-3,-2). Find the coordinates of the other points.

8. The tangent to the curve $y = x^3 - 7x + 6$ at the point (-1,12) has equation $y + 4x = 8$.
   Find the coordinates of the other point of intersection of the curve and this tangent.




9. The curve $y = x^3 - 10x + 6$ and the line $y = 2x - 10$ intersect at two points. Find the coordinates of these two points.

10. $f(x) = x^3 - 2x^2 - 5x + 6$ and $g(x) = x - 1$.

    (a) Show that $f(g(x)) = x^3 - 5x^2 + 2x + 8$.
    (b) Solve $f(g(x)) = 0$.
    (c) State a suitable domain for $\frac{1}{f(g(x))}$.