1 Find the equation of the line passing through $(-1, -9)$ and $(3, 11)$. Give your answer in the form $y = mx + c$. **[3]**

2 **(i)** Find the points of intersection of the line $2x + 3y = 12$ with the axes. [2]

(ii) Find also the gradient of this line. [2]

3 **(i)** Express $x^2 - 6x + 2$ in the form $(x - a)^2 - b$. [3]

(ii) State the coordinates of the turning point on the graph of $y = x^2 - 6x + 2$. [2]

(iii) Sketch the graph of $y = x^2 - 6x + 2$. You need not state the coordinates of the points where the graph intersects the x-axis. [2]

(iv) Solve the simultaneous equations $y = x^2 - 6x + 2$ and $y = 2x - 14$. Hence show that the line $y = 2x - 14$ is a tangent to the curve $y = x^2 - 6x + 2$. [5]

4 Find, algebraically, the coordinates of the point of intersection of the lines $y = 2x - 5$ and $6x + 2y = 7$. [4]

5 **(i)** Find the gradient of the line $4x + 5y = 24$. [2]

(ii) A line parallel to $4x + 5y = 24$ passes through the point $(0, 12)$. Find the coordinates of its point of intersection with the x-axis. [3]

6 **(i)**

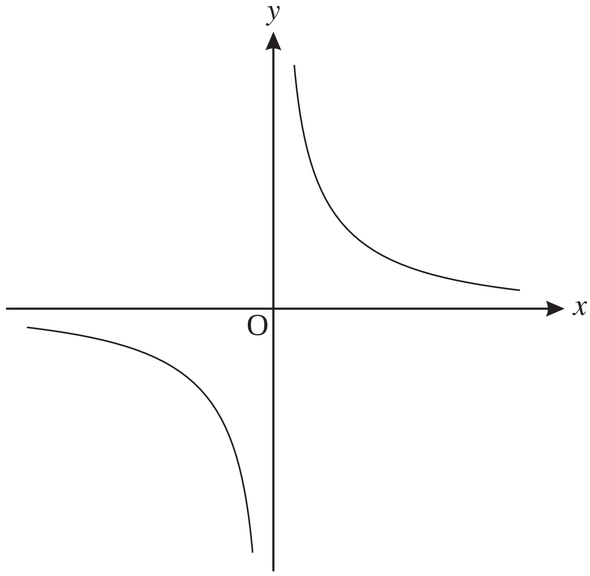

Fig. 10

Fig. 10 shows a sketch of the graph of $y = \frac{1}{x}$.

Sketch the graph of $y = \frac{1}{x-2}$, showing clearly the coordinates of any points where it crosses the axes. [3]

(ii) Find the value of x for which $\frac{1}{x-2} = 5$. [2]

(iii) Find the x-coordinates of the points of intersection of the graphs of $y = x$ and $y = \frac{1}{x-2}$. Give your answers in the form $a \pm \sqrt{b}$.

Show the position of these points on your graph in part **(i)**. [6]

7 Find, in the form $y = ax + b$, the equation of the line through $(3, 10)$ which is parallel to $y = 2x + 7$. [3]