3 The diagram shows the graph of \( y = x^n \), where \( n \) is an integer. Given that the curve passes between the points \( (2,200) \) and \( (2,2000) \), determine the value of \( n \).

4 Find the points of intersection of the curves 
   \[ y = x^2 - 7x + 5 \quad \text{and} \quad y = 1 + 2x - x^2. \]

5 Find the points of intersection of the line \( y = 2x + 3 \) and the curve \( y = 2x^2 + 3x - 7 \).

6 Find the coordinates of the point at which the line \( 3x + y - 2 = 0 \) meets the curve 
   \[ y = (4x - 3)(x - 2). \]

7 Find the coordinates of any points of intersection of the curves \( y = (x - 2)(x - 4) \) and 
   \( y = x(2 - x) \). Sketch the two curves to show the relationship between them.

8 Given that \( k \) is a positive constant, sketch the graphs of 
   \begin{align*}
   (a) \quad & y = (x + k)(x - 2k), \\
   (b) \quad & y = (x + 4k)(x + 2k), \\
   (c) \quad & y = x(x - k)(x - 5k), \\
   (d) \quad & y = (x + k)(x - 2k)^2.
   \end{align*}

9 The function \( f \) is defined by \( f(x) = ax^2 + bx + c \). Given that \( f(0) = 6 \), \( f(-1) = 15 \) and 
   \( f(1) = 1 \), find the values of \( a \), \( b \) and \( c \).

10 Find the point where the line \( y = 3 - 4x \) meets the curve \( y = 4(x^2 + 5x + 3) \).

11 Sketch the graphs of 
   \begin{align*}
   (a) \quad & y = (x + 4)(x + 2) + (x + 4)(x - 5), \\
   (b) \quad & y = (x + 4)(x + 2) + (x + 4)(5 - x).
   \end{align*}

12 A function \( f \) is defined by \( f(x) = ax + b \). Given that \( f(-2) = 27 \) and \( f(1) = 15 \), find the value of \( x \) such that \( f(x) = -5 \).

13 A curve with equation \( y = ax^2 + bx + c \) crosses the \( x \)-axis at \((-4,0)\) and \((9,0)\) and also 
   passes through the point \((1,120)\). Where does the curve cross the \( y \)-axis?

14 The curve \( y = ax^2 + bx + c \) passes through the points \((-1,22)\), \((1,8)\), \((3,10)\), \((-2,p)\) and 
   \((q,17)\). Find the value of \( p \) and the possible values of \( q \).

15 Show that the curves \( y = 2x^2 + 5x \), \( y = x^2 + 4x + 12 \) and \( y = 3x^2 + 4x - 6 \) have one point 
   in common and find its coordinates.

16 Given that the curves \( y = x^2 - 3x + c \) and \( y = k - x - x^2 \) meet at the point \((-2,12)\), find 
   the values of \( c \) and \( k \). Hence find the other point where the two curves meet.

17 Find the value of the constant \( p \) if the three curves \( y = x^2 + 3x + 14 \), \( y = x^2 + 2x + 11 \) and 
   \( y = px^2 + px + p \) have one point in common.

18 The straight line \( y = x - 1 \) meets the curve \( y = x^2 - 5x - 8 \) at the points \( A \) and \( B \). The curve 
   \( y = p + qx - 2x^2 \) also passes through the points \( A \) and \( B \). Find the values of \( p \) and \( q \).

19 The line \( y = 10x - 9 \) meets the curve \( y = x^2 \). Find the coordinates of the points of 
   intersection.