

AS Mathematics Coordinate geometry

Section 1: Points and straight lines

Exercise level 2

1. Find the equations of the following lines.
 - (i) parallel to $y = 4x - 1$ and passing through $(2, 3)$
 - (ii) perpendicular to $y = 2x + 7$ and passing through $(1, 2)$
 - (iii) parallel to $3y + x = 10$ and passing through $(4, -1)$
 - (iv) perpendicular to $3x + 4y = 12$ and passing through $(-3, 0)$
 - (v) parallel to $x + 5y + 8 = 0$ and passing through $(-1, -6)$

2. Find the equation of the line AB in each of the following cases.
 - (i) $A(1, 6)$, $B(3, 2)$
 - (ii) $A(8, -1)$, $B(-2, 3)$
 - (iii) $A(-5, 2)$, $B(7, -4)$
 - (iv) $A(-3, -5)$, $B(5, 1)$

3. A quadrilateral has vertices $A(3, 5)$, $B(9, 7)$, $C(10, 4)$ and $D(4, 2)$. Show that ABCD is a rectangle.

4. P is the point $(2, 1)$, Q is $(6, 9)$ and R is $(10, 2)$.
 - (i) Sketch the triangle PQR.
 - (ii) Prove that triangle PQR is isosceles.
 - (iii) Work out the area of triangle ABC.

5. Three points are $A(-1, 5)$, $B(1, 0)$, and $C(11, 4)$.
 - (i) Find the gradient of BA.
 - (ii) Find the gradient of BC, and show that BA is perpendicular to BC.
 - (iii) Find the equation of the line through C, parallel to BA.
 - (iv) Find the equation of the line through A, parallel to BC.
 - (v) Find the coordinates of point D, the remaining vertex of the rectangle ABCD.

P

P