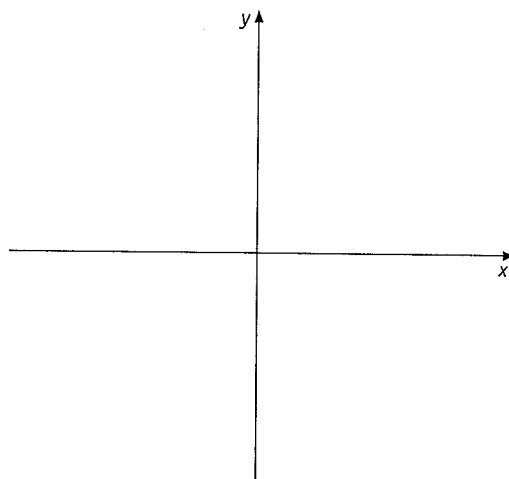# CHAPTER 9
Coordinate methods in geometry
Coordinate methods (1)

QUESTION **1**

a   Plot the points A(–2, 4), B(5, 3) and C(–7, –1) on the number plane provided.

b   Find the length of AB in simplest surd form.

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c   Show that triangle ABC is isosceles.
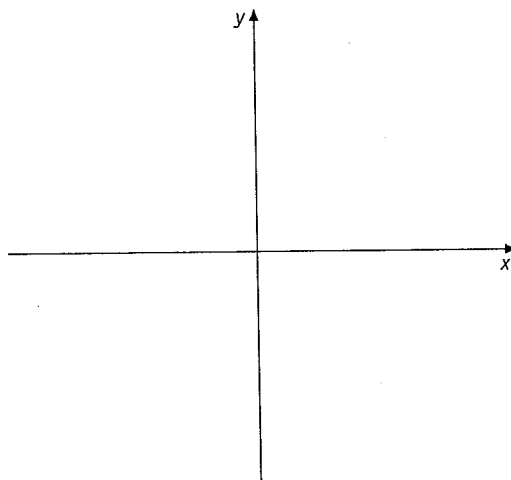
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QUESTION **2**   Find the point where the line, which passes through the point (3, 5) and which is perpendicular to the line $3x - 5y + 15 = 0$, cuts the x-axis.

Coordinate methods in geometry

Coordinate methods (2)

QUESTION **1**   A(2, 4), B(7, 4), C(4, 0) and D(−1, 0) are the vertices of a quadrilateral.

a Find the midpoint of BD

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b Find the midpoint of AC

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c Show that BD is perpendicular to AC

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d What type of quadrilateral is ABCD? Justify your answer.

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Coordinate methods in geometry

Coordinate methods (3)

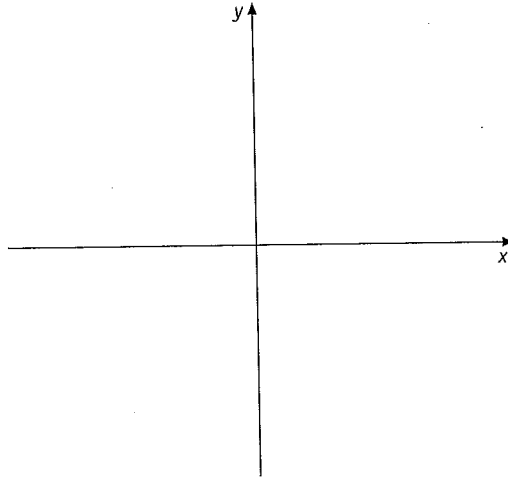QUESTION **1** Show that the triangle whose vertices are $(-2, 1)$, $(1, 1 + 3\sqrt{3})$ and $(4, 1)$ is equilateral.

(graph with x and y axes)

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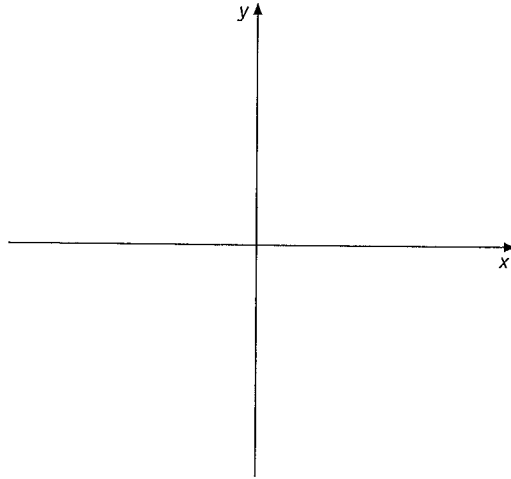
QUESTION **2** P and Q are the points $(-4, 9)$ and $(6, 1)$ respectively. Find the equation of the perpendicular bisector of PQ.

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Coordinate methods in geometry

Coordinate methods (4)

QUESTION **1**   A, B, C and D are the points (−2, 7), (4, 7), (4, −1) and (1, 3) respectively.

a Show that D is equidistant from A, B and C.

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b Find the equation of the circle which passes through A, B and C.

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Page 198 1 a (see right) b $5\sqrt{2}$ units c (AC = AB) 2 (6, 0)

Page 199 1 a (3, 2) b (3, 2) c (use gradients) d ABCD is a rhombus. The diagonals bisect each other at right angles.

1a

A(–2, 4) •   • B(5, 3)

C(–7, –1)
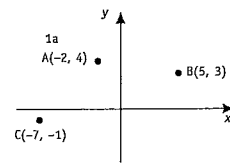
Page 200 1 (AB = AC = BC = 6 units) 2 $5x - 4y + 15 = 0$

Page 201 1 a (AD = BD = CD = 5 units) b $(x - 1)^2 + (y - 3)^2 = 25$