Skill 5.1 Locating a point the graph

Plot these points onto a graph:

A (1, 1)	B (−1, 2)	C (−2, 1)
D (0, 3)	E (0, −2)	F (1, −2)
G (−1, 3)	H (−2, 2)	I (2, 3)
J (3, 3)	K (−3, −3)	L (2, −2)
M (2, 0)	N (−2, 0)	O (0, 0)

Skill 5.2 Finding coordinates from linear equations

Complete the tables of values:

(a) $y = -3x$

x	−3	−2	−1	0	1	2	3
y							

(b) $y = 2x + 1$

x	−3	−2	−1	0	1	2	3
y							

(c) $y = 1 - x$

x	−3	−2	−1	0	1	2	3
y							

(d) $y = 4 - 2x$

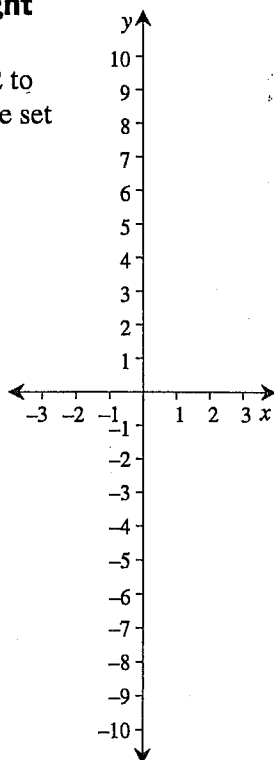| x	−3	−2	−1	0	1	2	3
y							

Skill 5.3 Plotting straight lines

Use the results from Skill 5.2 to plot the following lines on the set of axes given.

(a) $y = -3x$
(b) $y = 2x + 1$
(c) $y = 1 - x$
(d) $y = 4 - 2x$

Skill 5.4 Sketching straight lines

Sketch the following lines by finding the x- and y-intercepts,

(a) $y = 2x - 4$ (b) $y = 3x + 6$
(c) $y = -x + 4$ (d) $y = x - 5$

Skill 5.5 Finding the gradient of a line

Find the gradient of the straight line, drawn between the following points:

1 (2, 2) and (1, 1)   2 (1, −1) and (0, 0)
3 (−2, 3) and (0, 2)   4 (−2, −2) and (1, 1)
5 (−2, 3) and (1, 2)

Skill 5.6 The general equation of a straight line

Using the general equation of a line find the gradient and y-intercepts:

1 $y = 2x - 4$ 2 $y = \frac{1}{2}x + \frac{3}{4}$
3 $2y = 4x + 6$ 4 $3y = -9x + 12$
5 $x + y = 4$ 6 $2x + y = 5$
7 $4x + 2y = 10$ 8 $9x + 3y = -12$
9 $x - y = 6$ 10 $2x - y = 5$
11 $x + y + 12 = 0$ 12 $2x + y - 14 = 0$

Skill 5.7 Simultaneous equations

(a) Solve these simultaneous equations using the subsitution method:

$y = 3x + 1$ $y = x + 5$

(b) Sketch these lines by finding the x- and y-intercepts and find their point of intersection:

$y = 3x + 1$ $y = x + 5$

(c) What is the connection between answers to parts (a) and (b)?

Skill 5.8 Finding coordinates from quadratic equations
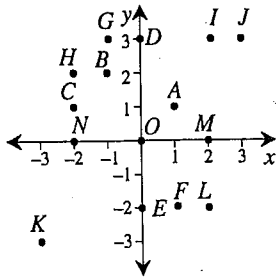
Complete the tables of values:

(a) $y = x^2 + 1$

x	−2	−1	0	1	2
y					

(b) $y = (x - 2)^2$

x	−1	0	1	2	3	4
y						

Answers

5 Cartesian plane

Skill 5.1

Skill 5.2

(a) $y = -3x$

x	–3	–2	–1	0	1	2	3
y	9	6	3	0	–3	–6	–9

(b) $y = 2x + 1$

x	–3	–2	–1	0	1	2	3
y	–5	–3	–1	1	3	5	7

(c) $y = 1 - x$

x	–3	–2	–1	0	1	2	3
y	4	3	2	1	0	–1	–2

(d) $y = 4 - 2x$

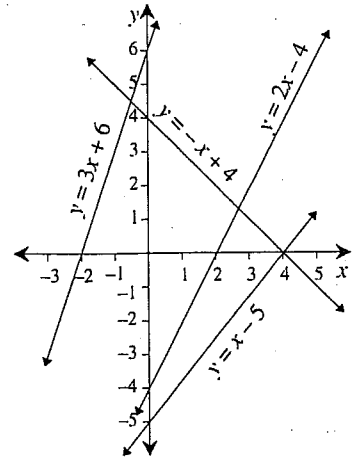| x	–3	–2	–1	0	1	2	3
y	10	8	6	4	2	0	–2

Skill 5.3
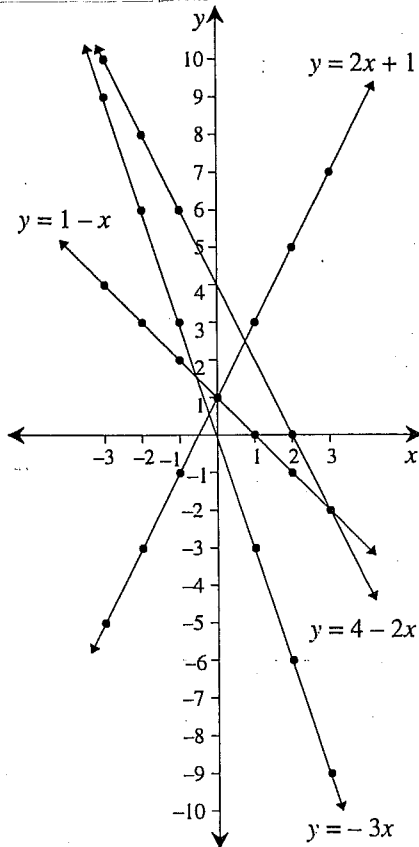
Skill 5.4

(a) $y = 2x - 4$
x-int., $x = 2$
y-int., $y = -4$

(b) $y = 3x + 6$
x-int., $x = -2$
y-int., $y = 6$

(c) $y = -x + 4$
x-int., $x = 4$
y-int., $y = 4$

(d) $y = x - 5$
x-int., $x = 5$
y-int., $y = -5$

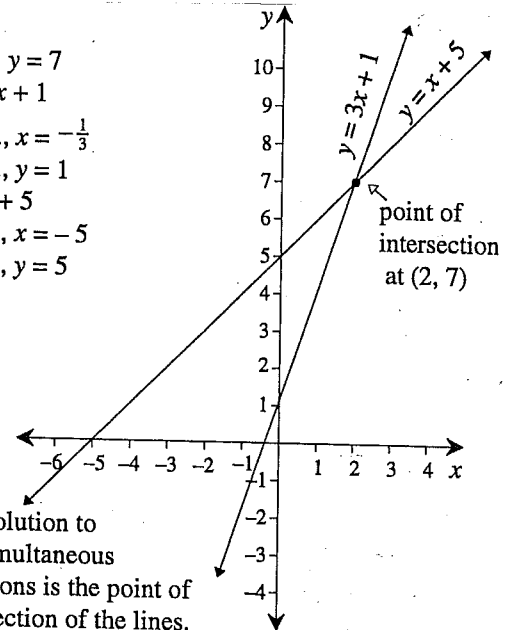### Skill 5.5

1 1   2 –1   3 $-\frac{1}{2}$ 4 1   5 $-\frac{1}{3}$

Skill 5.6

1 $m = 2, c = -4$ 2 $m = \frac{1}{2}, c = \frac{3}{4}$
3 $m = 2, c = 3$ 4 $m = -3, c = 4$
5 $m = -1, c = 4$ 6 $m = -2, c = 5$
7 $m = -2, c = 5$ 8 $m = -3, c = -4$
9 $m = 1, c = -6$ 10 $m = 2, c = -5$
11 $m = -1, c = -12$ 12 $m = -2, c = 14$

Skill 5.7

(a) $x = 2, y = 7$

(b) $y = 3x + 1$
x- int., $x = -\frac{1}{3}$
y- int., $y = 1$
$y = x + 5$
x- int., $x = -5$
y- int., $y = 5$

(c) The solution to the simultaneous equations is the point of intersection of the lines.

Skill 5.8

(a) $y = x^2 + 1$

x	–2	–1	0	1	2
y	5	2	1	2	5

(b) $y = (x - 2)^2$

x	–1	0	1	2	3	4
y	9	4	1	0	1	4

(c) $y = 2x^2 - 3$

x	–2	–1	0	1	2
y	5	–1	–3	–1	5