

### MAS051 — Example Sheet 3

To be handed in: Friday, October 11, 2002

Remember to give your Tutorial Group, along with your name, on the assignment.

Only the *asterisked* (starred) questions are to be handed in. You should attempt all the questions, however; they are intended to help you learn the material, and you can only do this by working through problems. You should only use a calculator to check your solutions (if at all).

**1** Solve the following pairs of equations.

(a) $2x + y = 5$ $x - y = 1$	(b) $3x + y = -1$ $2x + y = 0$	(c) $x + 2y = 7$ $3x + 2y = 9$	(d) * $3x + 2y = 8$ $5x - 2y = -8$
(e) $x + y = 1$ $2x - 3y = 12$	(f) $2x + 5y + 1 = 0$ $3x + 7y = 1$	(g) * $5v = 11 + 3u$ $2u + 7v = 3$	(h) * $3a - 4g = 1$ $6a - 6g = 5$
(i) $2s + 5t = 5$ $7s + 4t = 13$	(j) $2m - 3n = 5$ $2m - 5n = 7$	(k) * $4u - v = 3$ $2u + 3v = 12$	(l) $5x + 3y = 1$ $2x + 4y = -5$
(m) $2p - 5q = 8$ $3p - 6q = 11$	(n) * $2x = 2y + 1$ $5x = 3y + 3$	(o) $5d = 3e - 5$ $5e = d + 12$	(p) * $4e + 3f = 5$ $2e = 6f + 15$

**2** Determine whether the following pairs of equations have a unique solution, infinitely many solutions or no solution at all. (You need not solve any of the equations.)

(a) $2s + 5t = 5$ $4s + 10t = 13$	(b) $2m - 3n = 0$ $2m - 5n = 0$	(c) * $4u - 6v = 14$ $2u + 3v = 7$	(d) $5x + 3y = 1$ $15x + 9y = 3$
(e) $6p - 15q = 8$ $14p - 35q = 11$	(f) * $10x - 5y = 5$ $-6x + 3y = -3$	(g) $25d - 15e = 25$ $35d - 21e = -35$	(h) * $8e - 6f = 10$ $12e - 9f = 25$

**3** Find the distances between the following pairs of points (the answer in each case is a whole number):

(a)  $(-1, 2), (3, -1)$ ; (b)  $(3, -5), (8, 7)$   
(c)  $(-6, 6), (2, 0)$ ; (d)  $(10, -6), (-14, 4)$ .

**4** \* Find the distances between the following pairs of points (the answer in each case is a whole number):

(a)  $(2, 4), (6, 1)$ ; (b)  $(4, -20), (-5, 20)$   
(c)  $(-7, 15), (2, 3)$ ; (d)  $(-3, -6), (2, 6)$ .

**5** Which of the following straight lines contain the point  $(-2, 4)$ ? Answer YES or NO in each case.

(a)  $y = 2x + 8$ ; (b)  $y = 2x - 8$ ; (c)  $y - 1 = 3(x + 3)$ ;  
(d)  $3x + 4y = 22$ ; (e)  $y + 2 = 2(x + 1)$ ; (f)  $3x + 4y = 10$ .

**6** \* Which of the following straight lines contain the point  $(1, 3)$ ? Answer Y or N in each case.

(a)  $y = 2x + 1$ ; (b)  $y = 3x - 1$ ; (c)  $y + 1 = 2(x + 1)$ ;  
(d)  $3x + 4y = 15$ ; (e)  $y + 3 = 3(x + 2)$ ; (f)  $4x - 3y = -7$ .