MAS051 — Example Sheet 4

To be handed in: Friday, October 18, 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 In each of the following cases, find the equation, in the form $y = mx + c$, of the straight line with gradient m passing through the point P.

(a) $m = 0, P = (3, -4)$; (b) $m = 2, P = (-2, -1)$;
(c) $m = 2/3, P = (3, 0)$; (d) $m = -4, P = (-0.5, 2)$;
(e) $m = -1, P = (0, 1.5)$; (f) $m = 4; P = (-2, 3)$.

2* In each of the following cases, find the equation, in the form $y = mx + c$, of the straight line with gradient m passing through the point P.

(a) $m = 1, P = (4, -5)$; (b) $m = -3, P = (2, -1)$;
(c) $m = 1/2, P = (4, 4)$; (d) $m = 0, P = (-1, -2)$;
(e) $m = -1, P = (0, 5)$; (f) $m = 10; P = (1, 11)$.

3 Find the gradients of the following straight lines:

(a) $3y = x - 4$; (b) $y = 3x - 0.5$; (c) $0.5y - 2x = 2$;
(d) $3.6x - 1.2y = 0$; (e) $2x + 3y = 4$; (f) $x + y + 1 = 0$.

4* Find the gradients of the following straight lines:

(a) $y = x + 4$; (b) $y = -x - 0.5$; (c) $2y + 4x = 7$;
(d) $3y = x$; (e) $x - y + 1 = 0$; (f) $3x = y$.

5 In each of the following cases, find the equation of the straight line which passes through both of the points P_1 and P_2.

(a) $P_1 = (0, 1), P_2 = (2, 5)$; (b)* $P_1 = (0, -1); P_2 = (3, 8)$
(c) $P_1 = (-1, -2), P_2 = (-2, -2)$; (d)* $P_1 = (2, 3); P_2 = (0, 0)$;
(e) $P_1 = (2, -1), P_2 = (2, 6)$; (f)* $P_1 = (4, -3), P_2 = (2, 4)$.

6 (a) Find the equation of the straight line which passes through the point $(4, -2)$ and is parallel to the straight line $3x + 4y + 6 = 0$.

(b)* Find the equation of the straight line which passes through the point $(-1, 1)$ and is perpendicular to the straight line $5x - 6y - 2 = 0$.