

Lesson 2

GCSE Mathematics Simultaneous Equations III

2.1 Recap (Homework)

To solve questions like the following;

GCSE, June 2011, paper 3H, Q22

Solve the simultaneous equations

$$y = 2x - 3 \quad \text{(line)}$$

$$x^2 + y^2 = 2 \quad \text{(circle)}$$

We need to be competent at the following five topics;

- Expanding brackets, FOIL
- Gathering together like terms
- Rearranging equations into the form $f(x) = 0$
- Factorising quadratics
- Solving quadratic equations

2.2 Revision Exercise

Question 1

- Expanding brackets, FOIL

Expand the brackets;

(i) $(x + 6)(x + 11)$

(ii) $(3x + 5)(4x - 3)$

(iii) $(x + 4)^2$

Question 2

- Gathering together like terms

Simplify each of the following;

(i) $x^2 + 9x + 17x + 18$

(ii) $7x^2 + 17x - 3x^2 + 13 - 5x$

(iii) $15x^2 - (6x - 7) + 6x^2 - 15$

Question 3

- Rearranging equations into the form $f(x) = 0$

Rearrange each of the following equation into the form $f(x) = 0$

(i) $19x^2 + 2x + 6 = 5x + 3$

(ii) $5x^2 + 12x - 8 = 2x^2 - 7x + 8$

(iii) $13x^2 - (7x - 6) = 1 - 4x$

Question 4

This question is a mix the first three ideas.

- Expanding brackets, FOIL
- Gathering together like terms
- Rearranging equations into the form $f(x) = 0$

Rearrange each of the following equation into the form $f(x) = 0$

(i) $(x + 5)(x + 8) = 4x + 3$

(ii) $(x + 5)^2 = 7x + 9$

(iii) $(3x - 2)^2 = (x + 1)^2$