1 One solution of the equation $x^3 - 4x = 25$ lies between 3 and 4.

Use trial and improvement to find this solution correct to 1 decimal place.
Show all your trials and their outcomes.

.... **[4]**

1 One solution of the equation $x^3 - 4x = 25$ lies between 3 and 4.

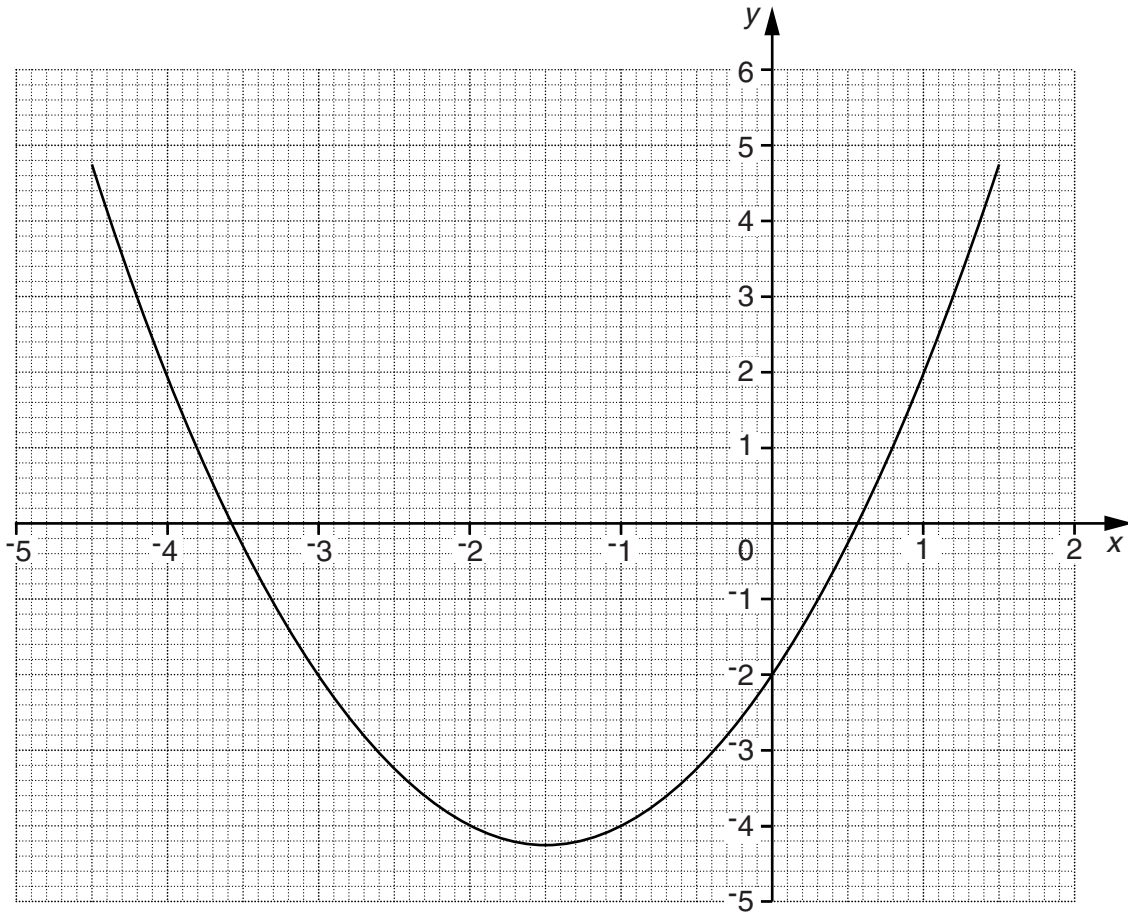**2** Use the quadratic formula to solve this equation.

$$x^2 + 5x + 1 = 0$$

Give your answers correct to 2 significant figures.

_____ **[3]**

3 Here is the graph of $y = x^2 + 3x - 2$.

(a) Use the graph to solve this equation.

$$x^2 + 3x - 2 = 0$$

(a) _____ **[2]**

(b) By drawing a suitable straight line on the grid, solve this equation.

$$x^2 + 3x - 2 = x + 2$$

(b) _____ **[3]**

4 Solve.

$$x^2 + 4x + 1 = 0$$

Give your answers correct to 2 decimal places.

.... **[3]**

5   Show that a solution of $x^3 - x = 20$ lies between 2 and 3.

6 (a) Factorise.

$$x^2 + 2x - 15$$

(a) .... **[2]**

(b) Hence solve this equation.

$$x^2 + 2x - 15 = 0$$

(b) .... **[1]**

(c) Simplify fully.

$$\frac{x^2 + 2x - 15}{x^2 - 9}$$

(c) .... **[2]**

7   **(a)** Solve.

$$6x^2 = 150$$

(a) .... **[3]**

(b) Rearrange this formula to make *a* the subject.

$$S = 4bc + 2a^2$$

(b) .... **[3]**

8 **(a)** Solve.

$$5(2x - 3) = 1$$

(a) _____ **[3]**

(b) Factorise completely.

$$6a^2 - 10a$$

(b) _____ **[2]**

(c) One solution of the equation $3x^2 = 108$ is $x = 6$.

Write down the other solution.

(c) _____ **[1]**

9 **(a** Solve.

$$4x^2 = 36$$

(a) _____ **[3]**

(b) Rearrange this formula to make A the subject.

$$c = \sqrt{\frac{A}{6}}$$

(b) _____ **[2]**

10 **(a)** Write this expression in completed square form, $(x + a)^2 - b$.

$$x^2 + 6x + 1$$

(a) _____ **[2]**

(b) Use your answer to part **(a)** to solve this equation.

$$x^2 + 6x + 1 = 0$$

Give your answers correct to 2 decimal places.
Show your working clearly.

(b) _____ **[4]**