1 **(a)** When $a = -5$, $b = -2$ and $c = 6$, find the value of

(i) a^2,

(a)(i) .... **[1]**

(ii) $1000b$,

(ii) .... **[1]**

(iii) $\dfrac{a+c}{b}$.

(iii) .... **[1]**

(b) Solve these equations.

(i) $2(3x - 1) = 10x - 5$

(b)(i) .... **[4]**

(ii) $x^2 - 4 = 60$

(ii) .... **[3]**

2   The equation $x^3 - 4x - 1 = 30$ has a solution between 3 and 4.

       Use trial and improvement to find this solution correct to one decimal place.

       Show all your trials and their outcomes.

.... **[4]**

3 Simon is asked to solve an equation.

Here is his solution.

$$2(3x - 1) = 7$$
$$6x - 2 = 14$$
$$6x = 14 - 2$$
$$6x = 12$$
$$x = \frac{1}{2}$$

Simon has made **three** errors.

(a) Explain the errors that he has made.

1 ....

....

2 ....

....

3 ....

.... **[3]**

(b) Show by substitution that $x = \frac{1}{2}$ is **not** the solution to the equation $2(3x - 1) = 7$.

....

.... **[1]**

4 The equation $x^3 - 6x = 4$ has a solution between 2 and 3.

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

_____ **[4]**

5 (a) Rearrange the following to make *c* the subject.

$$11a + 5c = d(6 + 2c)$$

(a) _____ **[4]**

(b) f(*x*) = 5*x* − 12.

    (i) Calculate f(4).

(b)(i) _____ **[1]**

    (ii) Find f(*x* + 1). Give your answer in the form *ax* + *b*.

(ii) _____ **[2]**

6 You are given that $f(x) = ax - 6$ and that $f(2) = 9$.

Find the value of a and hence find $f(4)$.

$a =$ _____

$f(4) =$ _____ **[3]**

7 **(a** Factorise.

$$6x + 8$$

(a) _____ **[1]**

(b) Work out the value of $x^2 - 9$ when

    (i) $x = 5$,

(b)(i) _____ **[1]**

    (ii) $x = {}^-4$.

(ii) _____ **[1]**

(c) Factorise.

$$x^2 - 9$$

(c) _____ **[1]**

8 **(a** Solve.

$$3(2x - 1) = 6$$

(a) _____ **[3]**

(b) Find the value of $3y^2 + 5$ when

(i) $y = 2.6,$

(b)(i) _____ **[1]**

(ii) $y = {}^-4.$

(ii) _____ **[1]**