(1) Factorise the following quadratic expressions:
(a) $x^2 - x - 12$
(b) $8 - 6x + x^2$
(c) $x^2 + 3x$

(2) Solve the following quadratic equations:
(a) $(x - 2)(x + 1) = 0$
(b) $(2x + 3)(x + 4) = 0$
(c) $x^2 - 2x - 8 = 0$
(d) $x(x - 1) = 6$

(3) Factorise the following quadratic expressions:
(a) $2x^2 + x - 1$
(b) $3x^2 - 5x - 2$
(c) $12x^2 + 16x - 3$

(4) Factorise and solve the following quadratic equations:
(a) $2x^2 - 5x - 3 = 0$
(b) $5x^2 + 4x - 1 = 0$
(c) $6x^2 + 7x = 3$
(d) $x(2x - 1) = 15$
(e) $0.4x^2 + x = 0.6$

(5) (a) Given that the quadratic equation $f(x) = (2x - 3)(3x - 5)$ can be written in the form $f(x) = ax^2 + bx + c$, find the values of $a, b$ and $c$.
(b) Write down the solutions to the equation $f(x) = 0$.
(c) Find the solutions to the equation $f(x) = 15$.

(6) Write the following quadratic expressions in the form $(x + a)^2 + b$
(a) $x^2 - 4x - 3$
(b) $2 - 6x + x^2$
(c) $x^2 + 5x + 2$
(d) $x^2 + 3x$

(7) Solve the following quadratic equations by completing the square leaving your answers in exact form where appropriate:
(a) $x^2 - 2x - 8 = 0$
(b) $x^2 + 3x + 1 = 0$
(c) $x^2 + 8x = 12$
(d) $2x^2 + 7x - 1 = 0$

(8) Write the following quadratic expressions in the form $a(x + b)^2 + c$:
(a) $2x^2 + 4x + 7$
(b) $-x^2 + 5x - 2$
(c) $7x^2 + 3x + 1$
(d) $8x + 5x^2$

(9) Solve the following quadratic equations by completing the square leaving your answers in exact form where appropriate:
(a) $3x^2 + 6x - 1 = 0$
(b) $7x^2 + 5x - 2 = 0$
(c) $4x(x - 6) = 7$

(10) (a) Sketch the graph of $y = x^2 + 4x + 1$ showing any points of intersection with the coordinate axes and the coordinates of the minimum point.
(b) Sketch the graph of $y = 2x^2 + 5x - 4$ showing any points of intersection with the coordinate axes and the coordinates of the minimum point.
(c) Sketch the graph of $y = 3 - 5x - x^2$ showing any points of intersection with the coordinate axes and the coordinates of the maximum point.

(11) (a) Given that the quadratic expression $2(x + 0.75)^2 - 1$ can be written in the form $ax^2 + bx + c$. Find the values of $a, b$ and $c$.
(b) Solve the equation $2(x + 0.75)^2 - 1 = 0$ giving your answers in exact form.

(12) Use the quadratic formula to find the solutions to the following equations. Give your answers in exact form:
(a) $x^2 - 3x - 8 = 0$
(b) $0 = 2 - 10x + x^2$
(c) $3x^2 - 2x - 4 = 0$
(d) $-x^2 + 7x - 1 = 0$
(e) $7x^2 = 1 + 5x$
(f) $0.3x + 1.2x^2 - 2.5 = 0$

(13) Part of the graph of $y = 4x^2 - 12x - 19$ is shown below. The curve crosses the $x$ axis at the points $A$ and $B$ and the $y$ axis at the point $C$.

(a) Write down the coordinates of the point $C$.
(b) Find the length of the line segment $AB$ giving your answer in exact form.

(14) In completed square form the equation $y = x^2 + px + q$ can be written as $y = (x - 2)^2 - 5$.
(a) Find the values of $p$ and $q$.
(b) Sketch the graph of $y = (x - 2)^2 - 5$ showing any point of intersection with the coordinate axes.
(c) Label the minimum point $M$ on the graph and write down its coordinates.
(d) The graph crosses the $x$ axis at the points $A$ and $B$. Find the area of the triangle $AMB$ giving your answer in exact form.

(15) (a) Find the solutions to the equation $px^2 + qx + r = 0$ in terms of $p, q$ and $r$.
(b) Given that $p < 0 < r < q$ draw a rough sketch of the curve $y = px^2 + qx + r$.