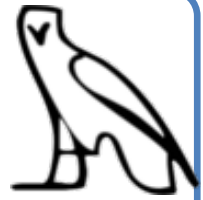# Completing The Square 2

Section A: *Express in the form $(x + a)^2 + b$.*

1) $x^2 + 2x$

2) $x^2 + 6x$

3) $x^2 - 4x$

4) $x^2 - 10x$

5) $x^2 + 2x - 6$

6) $x^2 + 8x - 1$

7) $x^2 - 4x + 5$

8) $x^2 - 10x - 7$

9) $x^2 + 3x$

10) $x^2 - 7x$

11) $x^2 + x + 4$

12) $x^2 - 3x + 1$

Section B: *Express in the form $a(x + b)^2 + c$.*

1) $2x^2 + 8x + 10$

2) $3x^2 - 12x + 2$

3) $4x^2 + 24x - 8$

4) $5x^2 - 20x - 15$

5) $4x^2 + 8x - 5$

6) $3x^2 - 12x + 7$

7) $2x^2 - 16x + 13$

8) $5x^2 + 20x - 6$

9) $2x^2 + 3x - 5$

10) $3x^2 - 2x + 1$

11) $4x^2 - 2x - 9$

12) $12x^2 + 3x + 10$

Section C: *Solve the equations by completing the square, leaving your answers as surds where appropriate.*

1) $y = x^2 + 2x - 3$

2) $y = x^2 - 4x - 9$

3) $y = x^2 - 6x - 10$

4) $y = 2x^2 + 4x + 1$

5) $y = 4x^2 - 16x - 9$

6) $y = 3x^2 - 9x - 8$

7) $y = 2x^2 + x - 4$

8) $y = 4x^2 - 4x - 11$

9) $y = -x^2 + x + \frac{1}{2}$

Extension

$$y = (x + 3)^2 - 4$$

A. Write down the minimum point of the curve.

B. Write down the coordinates of the point where the curve crosses the x-axis.

C. Write down the coordinates of the point where the curve crosses the y-axis.

D. What is the line of symmetry of the curve ?

E. Sketch the curve showing the exact coordinates of its turning point and where it crosses the x and y axes.

Repeat the steps above for the curve $y = 3x^2 + 6x - 5$