Exercises

1. Write each of the following expressions in the form $(x + B)^2 + C$.

   (a) $x^2 + 6x$ (b) $x^2 + 4x$

   (c) $x^2 + 8x$ (d) $x^2 - 10x$

   (e) $x^2 + 7x$ (f) $x^2 - 5x$

2. Write each of the following expressions in the form $(x + B)^2 + C$:

   (a) $x^2 + 6x + 1$ (b) $x^2 - 8x + 3$

   (c) $x^2 + 10x - 12$ (d) $x^2 + 12x + 8$

   (e) $x^2 - 4x + 1$ (f) $x^2 - 6x - 3$

   (g) $x^2 + 5x + 3$ (h) $x^2 + 3x - 4$

   (i) $x^2 + x - 2$ (j) $x^2 - x + 3$

3. Solve each of the following quadratic equation by completing the square:

   (a) $x^2 - 2x - 8 = 0$ (b) $x^2 + 4x + 3 = 0$

   (c) $x^2 + 8x + 12 = 0$ (d) $x^2 - 5x + 4 = 0$

   (e) $x^2 - 2x - 15 = 0$ (f) $x^2 + 3x - 28 = 0$

4. Solve each of the following quadratic equations by completing the square. Give your answers to 2 decimal places.

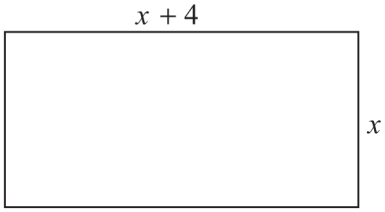
   (a) $x^2 + 2x - 5 = 0$ (b) $x^2 + 4x - 1 = 0$

   (c) $x^2 + 6x - 5 = 0$ (d) $x^2 - 10x - 1 = 0$

   (e) $x^2 + x - 3 = 0$ (f) $x^2 - 3x + 1 = 0$

   (g) $x^2 + 5x - 4 = 0$ (h) $x^2 + 3x - 5 = 0$

5. The rectangle shown has an area of 20 cm^2.



   (a) Write down an equation for the width x of the rectangle and show that it simplifies to $x^2 + 4x - 20 = 0$.

   (b) Use completing the square to determine the width of the rectangle to 2 decimal places.