Functions

1. (a) Write the definition of the odd and even function.

   (b) Give an example of an odd function and an example of an even function.

2. (a) Write the definition of one-to-one function.

   (b) Give an example of one-to-one function and an example of a function which is not one-to-one.

   (c) Write the definition of the inverse function.

3. Sketch the graph of the following functions:

   (a) $y = e^x + 2$

   (b) $y = (x + 4)^2$

   (c) $y = x^3 - 1$

   (d) $y = \sqrt{x - 2}$

4. Solve the following equations:

   (a) $2^x = 11$

   (b) $\ln x = 7$

   (c) $x^2 - 4x + 3 = 0$

   (d) $x^5 = 11$

5. Solve the following inequalities:

   (a) $x^2 - x + 12 > 0$

   (b) $x^2 - x + 3 \leq 0$

   (c) $x^2 - 4x + 4 \geq 0$

   (d) $x(x + 2)^5(x - 3)^2 > 0$

   (e) $(x + 1)^4(x - 2)^2(x + 3) \leq 0$

   (f) $\dfrac{(x + 1)(x - 2)^3}{(x + 2)^2} \geq 0$

   (g) $\dfrac{x^2 - x - 2}{x^2} \geq 0$

   (h) $\dfrac{x - 2}{x^2 + 1} > 0$

   (i) $\dfrac{x - 2}{x^2 - 1} > 0$