Mathematics Form 10

English

1. Show that the equation $2^x = 10$ has no rational roots, i.e. no solution of the form a/b where a and b are whole numbers and b > 0.

2. In a quadrilateral ABCD, the angle A is equal to 60°, the angles B and D are both equal to 90°, the side BC is 1 cm long and the side CD is 4 cm long. How long is the diagonal AC?

3. Which of the following numbers is the largest: $(6 + \sqrt{26})$ or $\sqrt{123}$?

4. a) Show that 53 cannot be written in the form 7a + 10b, where a and b are non-negative whole numbers.

   b) Show that all the whole numbers 54, 55, ….. ,70 can be written in the form 7a + 10b, where a and b are non-negative whole numbers.

   c) Show that all the whole numbers larger than 53 can be written in the form 7a + 10b, where a and b are non-negative whole numbers.

5. Show that the equation

   $$x^4 + x^3 + x^2 + x + 1 = 0$$

   has no real roots.