Exercise 1

Let *a* and *b* be two real numbers;
   a) Show that $(a^2 + b^2)^2 = (a^2 - b^2)^2 + (2ab)^2$
   b) Show that $a^4 - b^4 = (a-b)(a+b)(a^2 + b^2)$

Exercise 2

   a) Show that there are no positive integer number n such that $n^2 + n^3 = 100$
   b) Prove that there are no solutions in integers x and y to the equation $2x^2 + 5y^2 = 14$

Exercise 3

Let x be a real number. Solve $\sqrt{x^2 - 7} = \sqrt{1 - x^2}$

Exercise 4

Three consecutive integers add up to 51. What are those three integers?