Liceo Scientifico Statale M.Grigoletti, Pordenone
Modulo CLIL sui Numeri Complessi
Homework - Lesson 1

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1. Compare the solutions of the following pairs of equations:

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

   (b) $3x^2 - 2x + 5 = 0$ and $3x^2 - 2x - 5 = 0$

   (c) $3x^2 + 5 = 0$ and $3x^2 - 5 = 0$

2. Solve the following systems of equations in two unknowns:

   (a) $\begin{cases} x^2 - y^2 - x = 5 \\ x + 2y = 5 \end{cases}$

   (b) $\begin{cases} x^2 + y^2 - xy + 2x + 2y = 9 \\ x + y - xy = 3 \end{cases}$

3. Can you find a second degree equation of the kind $ax^2 + b = 0$, with negative values of a and b, that has the solution $x = -2$?

4. Write an equation of the fourth degree that has no solution in the real numbers.

5. (Difficult: try to discuss this problem with your classmates and, if possible, try to find information on the internet or on some textbooks. Solving this problem is not very important, what is important is trying to find a solution!) Can you find an equation of degree 5 that has no solution in the real numbers?