Exercise 3: (C++ friend – static – Operator Overloading)

1- For Complex class:
   a. Replace the input and output methods with overloaded >> and << operators, respectively, that are friend functions of the Complex class to print and input Complex Object .
   b. Provide an overloaded addition operator that will return the sum of two Complex objects and complete all the complex operation like subtraction multiplication and division .
   c. Provide an overloaded negation operator (unary -) that will negate both the real and imaginary parts of a complex number.
2- Quadratic Polynomials Write a program that will output the sum of two quadratic polynomials. Your program must do the following:
   a. Define an abstract data type, Poly with three private data members a, b and c (type double) to represent the coefficients of a quadratic polynomial in the form: ax2 + bx + c
   b. Include a constructor in the Poly class to initialize all private data members with caller-supplied values (in addition to the default constructor!)
   c. Overload the addition operator to return the sum of two Poly objects.
   d. Overload the << (output) operator to output Poly objects in the following format, e.g.,: ax^2 + bx + c Where a, b and c are the coefficients of the Poly object. Do not display the a or b terms if they have zero coefficients. Moreover, if any coefficient is negative it should be precede by a minus sign, and not a plus sign.
   e. In your main() function, declare and initialize two Poly objects, q1 and q2, to represent the following polynomials: 3x2 + 4x – 2 and -4x + 10 . Also declare a third, un-initialized Poly object named sum.
   f. Output the sum of the two polynomials to the console using the following C++ code exactly as it appears: sum = q1 + q2; cout << q1 << " : q1\n"; cout << q2 << " : q2\n"; cout << sum << " : q1+q2\n";