Practical Work No. 3

Exercise 1:

Write a Circle class that includes:

- as private data three components of type float: radius, abscissa and ordinate of the origin of the circle`
- a public constructor defined online,
- a friend function perimeter which calculates the perimeter of a circle (2*PI*R),
- a friendly air function that calculates the area of a circle (PI*R2),
- an offline output function (outside the class), which displays the radius, abscissa and ordinate, perimeter and area of a circle.

Write a main function using objects that tests these functions.
NB. PI must be defined as a constant.

Exercise 2:

Create an int_tab class that generates an array of n elements of type int. The number of elements in the array will be defined when generating an int_tab object by a constructor parameter. The class must also have a destructor. Finally, only a second class, ami_tab, will be allowed to create objects of type int_tab.

Exercise 3:

Write a Vector class that includes:

- as private data members: three components of type double,
- a display function,
- two constructors:
  - one, without arguments, initializing each component to 0,
  - the other, with 3 arguments, representing the components,
- a homothety function to multiply the components by a value provided as an argument.
- a prod-scal function which provides as a result the scalar product of two vectors,
- a sum function to calculate the sum of two vectors.

a -with offline member functions,
b- with online member functions.

All functions are public. Then write a main function that tests them.

Exercise 4:

Write a C++ program that reads an integer and squares it, without any lines of code in main.
To do this, create a square class that contains only the constructor.