2.**[30]** Short answer questions about your program in Problem 1:

a. [5] What is the meaning of const after a member function prototype?

The idea of const functions is not to allow them to modify the object on which they are called.

b. [5] What happens if you use the default copy constructor for Vector?

The default copy constructor will only do a shallow copy, meaning that the class does a member-wise copy between objects.

c. [5] What happens if you use the default assignment operator for Vector?

Same reason as what happens if you use the default copy constructor. Because the default assignment operator is not sufficient enough when there are pointers or any run time allocation of resources involved.

d. [5] Why pass Vector by reference but make it const as with operator *?

If you pass a Vector by const reference, you take in the vector by reference, avoiding making any copies of it, but cannot make any changes to the original object.

e. [5] Why are operators *, +, and << friends and not member functions?

Because friend functions can be given special grant to access private and protected members. A friend function can be a method of another class and/or a global function.

f. [5] Why does operator [] return a T & as opposed to a T?

To allow operator chaining. You can’t return a reference from arithmetic operations since they produce a new value. The only way to return a new value is to return it by value.

3.

1) Static scoping answer:

In Simple_Scoping Initially m = 10
In Q m = 6
In Simple_Scoping after Q m = 10
In Simple_Scoping after P m = 10

2) Dynamic Scoping anser:

In Simple_Scoping Initially m = 10
In Q m = 12
In Simple_Scoping after Q m = 12
In Simple_Scoping after P m = 12