```
1  #include <iostream>
2
3  using namespace std;
4
5
6  class v2d {
7  private:
8      // internal representation of a vector
9      double x;
10     double y;
11 public:
12     // Standard constructor
13     v2d(double, double);
14
15     // Copy constructor
16     v2d(const v2d &);
17
18     // Destructor
19     ~v2d(void);
20
21     // Assignment - Updates the vector to make it as v
22     v2d & operator=(const v2d &);
23
24     // Vector addition - Updates the vector by adding v
25     v2d & operator+(const v2d &);
26
27     // Scalar multiplication - Updates the vector by scaling by k
28     v2d & operator*(double k);
29
30     // Scalar product of the current vector by another vector
31     double operator*(const v2d &);
32
33     // computes the length of a vector
34     double length(void);
35
36     friend std::ostream& operator<<(std::ostream &, const v2d &);
37 };
```