# Ejercio 6

a)

```
1  int determinanteDeUnaMatrizTriangular(vector<vector<int>> m){    //n = |m|
2      int i = 0;                                                   //1
3      int determinante = 1;                                        //1
4
5      while (i < m.size())                                         //1 + n(1
6      {
7          determinante = determinante * m[i][i]                    //4
8      }
9
10     return determinante;
11 }                                                                //) = 3 + 5n
```

b)

```
1  bool esMatrizCuadrada(vector<vector<int>> m)     //|m| = n
2  {
3      bool esCuadrada = true;                      //1
4      int i;                                       //1
5
6      while (i < m.size())                         //1 + n ( 1
7      {
8          esCuadrada &= m[i].size() == m.size();   //3
9          i++;                                     //2
10     }
11
12     return esCuadrada;
13 }                                                //= 3 + 6n
14
15 bool laTriangularSuperiorEsNula(m)
16 {
17     bool esNula = true;                          //1
18     int i = 0;                                   //1
19
20     while (i < m.size())                         //1 + n(1
21     {
22         int j = i;                               //1
23         while (j < m[i].size())                  //2 + n/2(2
24         {
25             esNula &= m[i][j] == 0;              //4
26             j++;                                 //2
27         }                                        //)
28         i++;                                     //2
29     }                                            //) = 3 + n(6 + 4n)
30
31     return esNula;
32 }
33
34 bool laTriangularInferiorEsNula(m)
35 {
36     bool esNula = true;
37     int i = 0;
38
39     while (i < m.size())
40     {
41         int j = m.size();
42         while (j >= i)
43         {
44             esNula &= m[i][j] == 0 j--;
45         }
46         i++;
47     }
48
49     return esNula;
50 }
51
52 bool esTriangular(vector<vector<int>> m)
53 {
54     bool result = esCuadrada(m) &&
55                   (laTriangularSuperiorEsNula(m) || laTriangularInferiorEsNula(m));
56
```

```
57        return result;
58    }
```

c)

a) $3 + 5\text{n} \equiv O(n)$

b) $3 + 6n + 2 * (3 + n(6 + 4n)) = 9 + 18n + 8n^2 \equiv O(n^2)$