1. For each of the following code segments, find a function $f(n)$ with the property that the number of statements executed by the segment is $O(f(n))$. Your functions $f(n)$ should be as simple as possible.

(a) \[
\text{sum} = 0;
\text{for (int i = 0; i < n; i++)}
\text{sum++;}
\]

(b) \[
\text{sum} = 0;
\text{for (int i = 0; i < n; i++)}
\text{for (int j = 0; j < n; j++)}
\text{sum++;}
\]

(c) \[
\text{sum} = 0;
\text{for (int i = 0; i < n; i++)}
\text{for (int j = 0; j < n*n; j++)}
\text{sum++;}
\]

(d) \[
\text{sum} = 0;
\text{for (int i = 0; i < n; i++)}
\text{for (int j = 0; j < i; j++)}
\text{sum++;}
\]

(e) \[
\text{sum} = 0;
\text{for (int i = 0; i < n; i++)}
\text{for (int j = 0; j < i*i; j++)}
\text{for (int k = 0; k < j; k++)}
\text{sum++;}
\]

(f) \[
\text{sum} = 0;
\text{for (int i = 1; i <= n; i++)}
\text{for (int j = 1; j <= i*i; j++)}
\text{if (j % i == 0)}
\text{for (int k = 0; k < j; k++)}
\text{sum++;}
\]
2. Problem 5.2, page 161. You can assume that the tree is nonempty.

3. Problem 5.5, page 162.

4. Problem 5.7, page 162.