CSE 143 Quiz 7 May 22, 2001 Name _____

1. Give the lowest bound for the running time of the following code fragments, using O( ) notation. Your answers should be chosen from $O(n)$, $O(n^2)$, $O(n^3)$, $O(2^n)$, $O(n \log n)$, O(1), or $O(\log n)$.

(a)
```
for (i = 0; i < n; i++) {
   for (j = 0; j < n; j++) {
      c[i][j] = 0.0;
      for (k = 0; k < n; k++) {
         c[i][j] = c[i][j] + a[i][k]*b[k][j];
      }
   }
}
```

(b)
```
for (j = 0; j < n; j++) {
   cout << j;
}
for (k = n; k > 0; k--) {
   cout << k;
}
```

2. Show that the formula $6n^3 + 25n + 143 + 2n^2$ is $O(n^3)$ (i.e., argue that this formula is $O(n^3)$ by using the definition of what it means to say that $f(n) = O(g(n))$).