1. Explain why the statement, “The running time of algorithm A is at least \( O(n^2) \),” is meaningless.

2. Is \( 2^{n+1} = O(2^n) \)?

3. What value is returned by the following function? Express your answer as a function of \( n \). Give the worst-case running time using Big Oh notation.

   ```
   function somenum(n)
   r:=0
   for i:=1 to n-1 do
     for j:=i+1 to n do
       for k:=1 to j do
         r:=r+1
   return(r)
   ```

4. What is the algorithmic topic of chapter 4 called: dividing and solving problems to smaller instances and merging the solutions?

   _____________________________

5. ________________ is an equation or inequality that describes a function in terms of its value on smaller input.

   _____________________________

**In Class Problems**

1. Is \( 2^{2n} = O(2^n) \)? Proof by contradiction