Problem 1. R-5.1.

Problem 2. Write down a recurrence relation for the runtime of the following functions. Don’t forget the base case.

```cpp
int fun(int n) {
    if (n<=1) return n;
    for (int i=0; i<n; i++)
        cout << "This is fun!";
    return fun(n/2) * fun(n-1);
}

int fun2(int n) {
    if (n<=1) return 1;
    for (int i=1; i<=n/2; i++)
        cout << "Hello World!\n"
    int sum=0;
    for (int i=0; i<n; i++)
        sum *= fun2(n-1);
    sum *= sum;
    return sum;
}
```

Problem 3. R-5.4.

Problem 4. R-5.5. Note that the formulation of the algorithm I gave in class differs slightly from the one in the text. You can use either one. You may assume you have an oracle to solve subproblems.

Problem 5. C-5.2.