Name: _____

UCFID: _____

NID: _____

1) (10 pts) ANL (Algorithm Analysis)

What is the run-time of the function `hash_func` shown below, in terms of *n*, the length of its input string? Please provide sufficient proof of your answer. (9 out of the 10 points are awarded for the proof. 1 point is awarded for the answer.)

```c
#include <stdio.h>
#include <string.h>
#define MOD 1072373
#define BASE 256

int hash_func(char* str);
int hash_func_rec(char* str, int k);

int hash_func(char* str) {
    return hash_func_rec(str, strlen(str));
}

int hash_func_rec(char* str, int k) {
    if (k == -1) return 0;
    int sum = 0;
    for (int i=k-1; i>=0; i--)
        sum = (BASE*sum + str[i])%MOD;
    return (sum + hash_func_rec(str, k-1))%MOD;
}
```