Full Name: _____

Lab 4: Recurrence Relations Lab

Note: This work must be completed by the end of the lab.

Goals:

1. Be able to determine the run-time efficiency of a recursive function.

Tasks:

- (/20) Compute the run-time efficiency of function *e* and *f* below. The correct answer is worth 2 marks per function; the rest is based on the derivation of the answer.
- (/2 bonus) Compute the run-time efficiency of the function *g* below. To get the bonus, the derivation and answer must be correct.

```
int e(int n) {
        if (n <= 1) {
                return 1;
        }

        int value = n * e(n / 10);

        return value;
}

int f(int n) {
        if (n <= 1) {
                return 1;
        }

        int value = f(n - 10) + 10;

        return value;
}

int g(int n) {
        if (n <= 1) {
                return 1;
        }

        int value = g(n / 10);
        int value2 = 0;
        for (int i = 1; i <= n; i = i + 2) {
                value2 = value2 + value * i;
        }

        return value2;
}
```

Please use the next page for your **final** answers