Assignment 06 - P1 Runtime Analysis

Ryan Brinson

1.

$$T(n) = c * (n - 1)$$
$$= O(n)$$

2.

$$T(n) = c * (n - 1) * (n - 1)$$
$$= c * (n^2 - 2n + 1)$$
$$= O(n^2)$$

3.

$$T(n) = c * (n - 1) * (n^2 - 1)$$
$$= c * (n^3 - n^2 - n + 1)$$
$$= O(n^3)$$

4.

$$T(n) = \sum_{j=0}^{n} jc$$
$$= c + 2c + 3c + \cdots + c(n - 1)$$
$$= \frac{c * n * (n - 1)}{2}$$
$$= \frac{cn^2}{2} - \frac{cn}{2}$$
$$= O(n^2)$$

5.

$$T(n) = \sum_{j=0}^{n^2} \sum_{k=0}^{n^2} kc$$
$$= O_i(n) * O_j(n^2) * O_k(n^2)$$
$$= O(n^5)$$