

## COSC242: Tutorial Week 2

### Big- $O$ and Big- $\Theta$

In these exercises, don't just give a yes/no answer. Write out your reasoning in full, making use of the definitions. In other words, prove or disprove each statement.

1. Suppose  $f(n) = 5$  for all  $n$ .
  - (a) Is  $f = O(1)$ ?
  - (b) Is  $f = \Theta(1)$ ?
2. Suppose  $f(n) = 3n + 6$  for all  $n$ .
  - (a) Is  $f = O(n)$ ?
  - (b) Is  $f = \Theta(n)$ ?
  - (c) Is  $f = O(n^2)$ ?
3. Suppose  $f(n) = 2n^2 + 3$  for all  $n$ .
  - (a) Is  $f = O(n^2)$ ?
  - (b) Is  $f = \Theta(n^2)$ ?
  - (c) Is  $f = O(n^3)$ ?