

# COSC 311: ALGORITHMS

## MINI 4

Due Wednesday, October 3 in class

### 1. Applying the Master Theorem.

(a) Let  $T(n) = 4T(n/4) + \sqrt{n}$ . Use the Master Theorem to determine the  $\Theta$  class of  $T(n)$ .

(b) Let  $T(n) = 9T(n/3) + 2n^2$ . Use the Master Theorem to determine the  $\Theta$  class of  $T(n)$ .

**2. Interpreting the Master Theorem.** Why do we compare  $n^{\log_b a}$  and  $f(n)$  when deciding which case of the Master Theorem applies? What does this comparison tell us about where most of the work happens in the algorithm we're studying?