

# Algorithms (COT 6405): Assignment 5

Due date: September 25 (Thursday)

## Problem 1 (10 points)

Determine asymptotically tight bounds ( $\Theta$ -notation) for each of the following recurrences, and show the derivation of your bounds:

(a)  $T(n) = T(n/6) + T(n/3) + T(n/2) + n.$

(b)  $T(n) = T(n - 1) + n.$

(c)  $T(n) = T(n - 1) + 1/2^n.$

(d)  $T(n) = T(\sqrt{n}) + 1.$

(e)  $T(n) = \sqrt{n} \cdot T(\sqrt{n}) + n.$