COMP 3711 – Spring 2019
Tutorial 3a

1. Using the *Master Theorem*, give asymptotic tight bounds for $T(n)$

(a)

$$\begin{aligned} T(1) &= 1 \\ T(n) &= 3T(n/4) + n \qquad \text{if } n > 1 \end{aligned}$$

(b)

$$\begin{aligned} T(1) &= 1 \\ T(n) &= 3T(n/4) + 1 \qquad \text{if } n > 1 \end{aligned}$$

(c)

$$\begin{aligned} T(1) &= 1 \\ T(n) &= 4T(n/2) + n^2 \qquad \text{if } n > 1 \end{aligned}$$

(d)

$$\begin{aligned} T(1) &= 1 \\ T(n) &= 4T(n/3) + n^2 \qquad \text{if } n > 1 \end{aligned}$$

(e)

$$\begin{aligned} T(1) &= 1 \\ T(n) &= 9T(n/3) + n^2 \qquad \text{if } n > 1 \end{aligned}$$

(f)

$$\begin{aligned} T(1) &= 1 \\ T(n) &= 10T(n/3) + n^3 \qquad \text{if } n > 1 \end{aligned}$$

(g)

$$\begin{aligned} T(1) &= 1 \\ T(n) &= 99T(n/10) + n^2 \qquad \text{if } n > 1 \end{aligned}$$

(h)

$$\begin{aligned} T(1) &= 1 \\ T(n) &= 101T(n/10) + n^2 \qquad \text{if } n > 1 \end{aligned}$$