

Name: _____

4.5 The master method for solving recurrences

1. State **Theorem 4.1** (*Master Theorem*):

2. Use the master method to give tight asymptotic bounds for the following recurrences. State which Case applies and in Case 3 identify the c required for the “regularity condition” required for $f(n)$:
 $af(n/b) \leq cf(n)$ for some $c < 1$ and all sufficiently large n .

(a) $T(n) = 2T(n/4) + 1$

(b) $T(n) = 2T(n/4) + \sqrt{n}$

(c) $T(n) = 2T(n/4) + n$

(d) $T(n) = 2T(n/4) + n^2$