CISC 3220 Homework

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Problem 4.5-1 a

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

$a = 2$

$b = 4$

$f(n) = 1$

$n^{log_b a} = n^{log_4 2} = n^{0.5}$

Case 1: $f(n) = \mathcal{O}(n^{log_b a - \epsilon})$

$0 \leq 1 \leq c \cdot n^{.5-\epsilon}$

Let $\epsilon = .1$

For all asymptotically positive functions, there is a c such that: $0 \leq 1 \leq c \cdot n^{.4}$

So $T(n) = \Theta(n^{0.5})$

Thus, $c_1 \cdot n^{0.5} \leq 2T(n/4) + 1 \leq c_2 \cdot n^{0.5}$

Let $c_1 = 1$

Let c_2 =???

I can't seem to find a value for c_2 here that is not dependent on n.

What am I doing wrong?? Using 10 for now.