

3) (10 pts) ANL (Recurrence Relations)

Using the iteration technique, determine a closed-form solution for the following recurrence relation in terms of n . Note: Your answer should be **EXACT** and not a Big-Oh bound.

$$\begin{aligned} T(0) &= 1 \\ T(n) &= 4T(n-1) + 2^n, \text{ for integers } n > 0 \end{aligned}$$