ALGORITHMS
Recurrences

Find the closed form for each T(n) given as a recurrence:

1.
$$T(n) = \begin{cases} 2 & : \quad n = 1 \\ T(n-1) + 2 & : \quad n \geq 2 \end{cases} \tag{1}$$

2.
$$T(n) = \begin{cases} 2 & : \quad n = 1 \\ T(n-1) + 4n - 3 & : \quad n > 1 \end{cases} \tag{2}$$

3.
$$T(n) = \begin{cases} 2 & : \quad n = 1 \\ 2T(n-1) - 1 & : \quad n \geq 2 \end{cases} \tag{3}$$

4.
$$T(m) = \begin{cases} 0 & : \quad m = 1 \\ 2T(m-1) + m - 1 & : \quad m > 1 \end{cases} \tag{4}$$

5. Let $n = 2^m - 1$. Rewrite your answer of the previous problem as a function of n.