

3) (10 pts) ANL (Summations)

Recall that $\sum_{i=0}^{n-1} 2^i = 2^n - 1$.

(a) (8 pts) Using this result, determine a closed-form solution in terms of n , for the summation below.

(b) (2 pts) Determine the numeric value of the summation for $n = 9$.

$$\sum_{i=0}^n \left(\sum_{j=0}^{i-1} 2^j \right)$$