Let $\mathcal{I} = \displaystyle\int_{5}^{10} \cos\left(\frac{x^2}{3}\right) + x \, dx$

1. Calculate T_{30} and S_{30}.

2. Use Theorem 5.5.1 to determine how close these are to the actual value of $\mathcal{I}$.

3. Find a value of n so that T_n approximates $\mathcal{I}$ accurate within 0.0001. Calculate T_n.

4. Find a value of n so that S_n approximates $\mathcal{I}$ accurate within 0.0001. Calculate S_n.