Let $\mathcal{I} = \int_5^{10} \cos\left(\frac{x^2}{3}\right) + x \; dx$

1. Calculate $M(100)$ and $T(100)$.

2. Use Theorem 5.27 to determine how close these are to the actual value of $\mathcal{I}$.

3. Find a value of n so that $M(n)$ approximates $\mathcal{I}$ accurate within 0.0001.

4. Find a value of n so that $T(n)$ approximates $\mathcal{I}$ accurate within 0.0001.