

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

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.