

3. [12 points]

a. [8 points] Estimate the value of I , where

$$I = \int_0^1 e^{-\frac{t^2}{2}} dt$$

using $LEFT(3)$, $RIGHT(3)$, $MID(3)$ and $TRAP(3)$. Write each sum.

b. [4 points] Which among the four Riemann sums ($LEFT(n)$, $RIGHT(n)$, $MID(n)$ and $TRAP(n)$) yields the closest underestimate to I , for any number n of subdivisions of the interval $[0, 1]$? Justify your answer.