

Riemann sum problems – Solutions

1. Use a calculator to compute R_{10} for the function $f(x) = e^{-x^2}$ on the interval $[0, 2]$.

Solution: When we divide the interval $[0, 2]$ into ten subintervals, each subinterval has width $2/10$, or 0.2 . The right endpoint of the first subinterval is at $x = 0.2$, and the right endpoint of the last subinterval is at $x = 2$. We set Y_1 to e^{-x^2} and compute the sum of $0.2 * Y_1$ as x goes from 0.2 to 2 in increments of 0.2 . The result is about 0.783670 .

2. Use a calculator to compute M_{50} for $f(x) = \frac{2}{1+x^2}$ on the interval $[-1, 1]$.

Solution: When we divide the interval $[-1, 1]$ into fifty subintervals, the width of each subinterval is $2/50$, or 0.04 . The midpoint of the first subinterval is $-1 + 0.02 = -0.98$, and the midpoint of the last subinterval is $1 - 0.02 = 0.98$. We set Y_1 to $2/(1+x^2)$ and compute the sum of $0.04 * Y_1$ as x goes from -0.98 to 0.98 in increments of 0.04 . The result is about 3.141726 .