

June 19th, 2021

Name _____

SWMS- Worksheet 4 in Probability and Statistics

1. Using R, obtain a Monte Carlo estimate of the following integrals and show that the approximation goes to 0 as n increases:

(a) $\int_0^{10} x^{15} e^{-5x} dx$

(b) $\int_0^1 \sin(50x) \log(x^2 + 10) dx$

2. Using R and only 1000 draws from $\text{Unif}(0,1)$, obtain a Monte Carlo estimate of the following integrals:

(a)
$$\int_0^1 \exp(-x^2/200) dx + \int_0^1 \sin(50x) \log(x^2 + 10) dx$$

(b)
$$\int_0^1 \frac{\log(x+1)}{x+1} dx$$