Tutorial 3

STAT 3013/8027

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1. Rice Chapter 5, questions 20, 21 (a).
2. Outline and conduct a Monte Carlo approximation to the following integral:

$$I = \int_0^\infty 25x^2 cos(x^2) exp(-25x) dx$$

3. Let $U \sim$ uniform$(0, 1)$.
   a. Show that both $-\log(U)$ and $-\log(1-U)$ are exponential random variables.
   b. Show that $\log\left(\frac{u}{1-u}\right)$ is a logistic(0,1) random variable.
   c. Show how to generate samples from a logistic(μ, β).