# Tutorial 3
## *STAT 3013/4027/8027*

1. Answer the following questions from SI: 2.6 (just find the C-R LB), 2.8, 2.10.

2. (From John Rice): A drunkard executes a "random walk" in the following way: Each minute he takes a step north or south, with probability 1/2 each, and his successive step directions are independent. His step length is 50 cm. Use the central limit theorem to approximate the probability distribution of his location after 1 hour. Where is he most likely to be? **Can you also code this in R?**

3. (from John Rice): Use the Monte Carlo method with $n = 100$ and $n = 1000$ to estimate:

$$\int_0^1 cos(2\pi x)dx$$

Compare it with the exact answer.

4. (from John Rice): Use the Monte Carlo method with $n = 100$ and $n = 1000$ to estimate:

$$\int_0^1 cos(2\pi x^2)dx$$

No exact answer (i.e. closed form analytical solution) exists.