5. **Continuous Assessment** Similar to the assignment question, we are interested in if the stock rises above 5% of the price. In this case, we are told to us Standard Geometric Brownian Motion for Stocks, therefore $\mu = 0$ and $\sigma = 1$. The Stock is lifted at \$20, and we assume that $S_0 = 20$. This means we wish to compute

$$P(S_t(T) \geq 20 * 1.05).$$

This can be rewritten as

$$P(S_0 e^{B_t(T)} \geq S_0 * 1.05) = P(B_t(T) \geq 1.05) = 1 - P(Z \leq \frac{1.05}{\sqrt{T}}).$$

By using different values of T and doing a simulation, we can see what happens!