1. (10) Write MATLAB code using `rand` to generate a random number from the following distribution:

   The probability that the number is 0 is 0.6.
   The probability that the number is 1 is 0.4.

   (In other words, if $p(x)$ is the probability density function, then $p(0) = 0.6$ and $p(1) = 0.4$. )
2. (10) Write MATLAB code to compute the volume of the unit sphere $x_1^2 + x_2^2 + x_3^2 \leq 1$ using Monte Carlo integration. (You may use any of our three methods, although I suggest not using importance sampling because it is harder to write down.)