Using R to calculate probabilities-continued

- To compute f(x) when x is Exponential with parameter 1/lambda, i.e.,

$$f(x) = \lambda e^{-\lambda x}, \lambda>0, x>0,$$

(mean=1/lambda), type `dexp(x,rate=lambda)`

- To compute P(X<=x) when X is Exponential with parameter 1/lambda, type `pexp(x,rate=lambda)`

  Example: `pexp(2,rate=5);` it calculates P(X<=5) when X is Exponential with mean 1/5.

  Exercise: Suppose X is Exponential with mean=4. Use R and compute P(X<2) and P(X>=2).

Using R to simulate data

- To simulate `m` numbers from a Binomial distribution with parameters `n` and `p`, type `rbinom(m,n,p)`

  Example: `rbinom(20,10,0.4);` it simulates 20 samples from the Binomial distribution with parameters 10 and 0.4.

- To simulate `m` numbers from a Poisson distribution with parameter mu=lambda*t, type `rpois(m,x,mu)`

  Example: `rpois(20,3);` it generates a sample of size 20 of Poisson distribution with parameter mu=3.

- To simulate `m` numbers from a Uniform distribution over the interval [a,b], type `runif(m,a,b)`

  Example: `runif(20,0,1);` it generates a sample of size 20 of Uniform distribution over the interval [0,1].

- To simulate `m` numbers from an Exponential distribution with mean parameter 1/lambda, type `rexp(m,rate=lambda)`

  Example: `rexp(50,rate=2);` it generates a sample of size 50 of Exponential distribution with mean 1/2.

- To simulate `m` numbers from a Normal distribution with parameters mu (mean) and sigma (standard deviation), type `rnorm(m,mu,sigma)`

  Example: `rnorm(20,0,1);` it generates a sample of size 20 of standard Normal distribution.