Use R to do the following. All code used to produce your answers must be saved in a .R file. Your answers (with explanations when necessary) and output must be presented using a document setting software (such as Word or LaTeX). Both should be sent to me via email, however the latter can be printed and attached to your homework assignment if you wish.

1. If $X \sim Bin(n = 100, p = 0.3)$, find
    a. $P(X = 39)$.
    b. $P(X \geq 25)$.
2. If $X \sim Beta(\alpha = 5, \beta = 3)$, find
    a. $P(0.4 \leq Y \leq 0.5)$.
    b. The value of *k* such that $P(Y \leq k) = 0.7$.
3. Draw a histogram of 100 random numbers taken from a gamma distribution with α = 2 and β = 5. (Note: Do not use rate! Check the help file on the gamma distribution to make sure you're using the correct arguments for the function.) Make the main title of the graph "100 random values from Gamma(2,5)" and label the x axis with an x and the y axis with a y.