Matlab Assignment-1

MTH 201

July, 2021

Q-1
Suppose the the probability model for the weight in pounds X of a person is given by the following.

$$P_X(x) = \begin{cases} 0.025, & \text{if } x = 40, 50, 60, 70 \\ 0.225, & \text{if } x = 80, 90, 100, 110 \\ 0, & \text{otherwise} \end{cases} \tag{1}$$

$P_X(x)$ is the Probability mass function of the model

i) Write a Matlab function or expression that calculates the probability for each of the components in the array(or vector) Z=[50,0.2,6,120]. Print the answer as an array or vector using appropriate Matlab functions

ii) Bar Plot for the above distribution

Q-2
Lets define the PMF of a random variable Z as following:

$$P_Z(y) = \begin{cases} pq^{y-1}, & \text{for } y = 1, 2, 3, 4...99 \\ q^{y-1}, & \text{for } y = 100, \\ 0, & \text{otherwise} \end{cases} \tag{2}$$

i) Find the Expected Value of $1/2^Z$. Given Z is random variable where success probability p = 9/10 and q=1-p.

ii) Plot a stair wise CDF for the above distribution

Q-3
We need to to create a Poisson distribution object with the rate parameter,

$$\lambda = 3$$

i) First generate an array or vector of first 10 natural numbers. Then Calculate the CDf of the this object for each of the values.

ii) Plot the above distribution function.