BFOR 416/516

HOMEWORK 2 – Solutions

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1. Determine if each of the following is discrete or continuous random variable
   1. The number of seniors in a high school: discrete
   2. The time it takes to complete a marathon: continuous
   3. The time it takes a student at random to register for the fall semester: continuous
   4. The amount of gasoline needed to drive your car 200 miles: continuous
2. Of the automobiles produced at a particular plant, 40% had a certain defect. Suppose a company purchases five of these cars. What is the expected value for the number of cars with defects?

p = 0.4

n=5

E(x) = n\*5 = 5\*0.4=2

1. Let X be a discrete random variable with the following PMF

0.2

0.1

0.4

0.2

0.5

0.2

0.8

0.3

1

0.2

Px(x)

X

1. Compute expected value. E(x) =0.02+0.08+0.1+0.24+0.2 = 0.64
2. Compute standard deviation and variance. 0.2615, 0.0684
3. Find Rx, the range of the random variable X. {0.2, 0.4, 0.5, 0.8,1}
4. Find P(X ≤ 0.5) = P(X=0.5) + P(X = 0.4) + P(X=0.2) = 0.2 + 0.2 + 0.1 = 0.5
5. Find P(0.25 < X < 0.75) = P(X=0.4) + P(X=0.5) = 0.4
6. Find P(X = 0.2 │ X < 0.6) = p(X=0.2 and X < 0.6)/P(X<0.6) = 0.1/0.5=1/5