STAT537: Statistics for Research I: HW#2

Due on Sep. 13, 2016

Dr. Schmidhammer TR 11:10am – 12:25pm

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Contents

Problem 1

Let y be a binomial random variable. Compute P(y) for each of the following situations:

Solution. (a) $P = 0.2013266$

(b) $P = 0.3456$

(c) $P = 0.2040483$

□

Problem 2

Let y be a binomial random variable with n=8 and p=.4. Find the following values:

Solution. (a) $P = 0.8263296$

(b) $P = 0.1736704$

(c) $P = 0.9914803$

(d) $P = 0.04980736$

□

Problem 3

Exercise 4.46

Solution. (a) $P = \binom{10}{2}(0.1)^2(0.9)^8 = 0.1937102$

(b) $P = 1 - \binom{10}{0}(0.1)^0(0.9)^{10} - \binom{10}{1}(0.1)^1(0.9)^9 = 0.2639011$

(c) $P = \binom{10}{8}(0.85)^8(0.15)^2 = 0.2758967$

(d) $P = \binom{10}{0}(0.05)^0(0.95)^{10} = 0.5987369$

□

Appendix

R code for HW#2

Listing 1: R Source code for HW#2

```
rm(list = ls())
# problem 1
pro1 = dbinom(3, size=10, prob=0.2)
pro2 = dbinom(2, size=4, prob=0.4)
pro3 = dbinom(12, size=16, prob=0.7)

pro1
pro2
pro3

# problem  2
```

```
prole4 = pbinom(4, size=8, prob=0.4)  # P[X<=4]
prog4 = 1 - prole4

prole4
prog4

prole7 = pbinom(7, size=8, prob=0.4)  # P[X<=7]
pro7 = dbinom(7, size=8, prob=0.4)  # P[X<=6]
prol7 = prole7-pro7  # P[X< 7] = P[X<=7] - P[X=7]

prol7


prole6 = pbinom(6, size=8, prob=0.4)  # P[X<=6]
pro6 = dbinom(6, size=8, prob=0.4)  # P[X=6]

proge6 = 1-prole6+pro6

proge6

# problem 3
p1 = dbinom(2, size=10, prob=0.1)
p1

p2 = 1- dbinom(0, size=10, prob=0.1)-dbinom(1, size=10, prob=0.1)
p2

p3 = dbinom(8, size=10, prob=0.1)+dbinom(8, size=10, prob=0.75)
p3

p4 = dbinom(0, size=10, prob=0.05)
p4
```