HW5 MATH 1550 Fall 2018

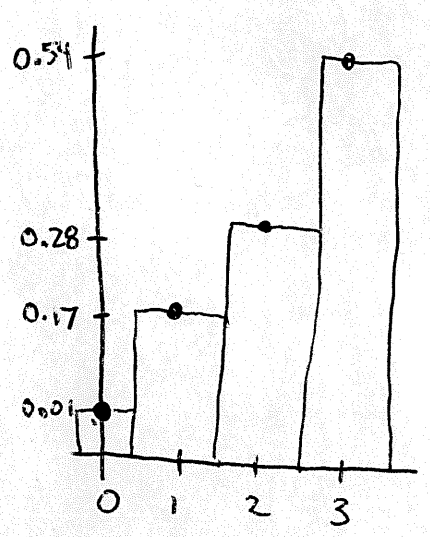
§4.1 #19

(a)

Televisions	(Frequency) Households	Relative Frequency
0	26	$26/2600 \approx 0.01$
1	442	$442/2600 \approx 0.17$
2	728	$728/2600 \approx 0.28$
3	1404	$1404/2600 \approx 0.54$

Sum of freq = 2600

(b)



#21

(a) $P(x=1 \text{ or } x=2) = P(x=1) + P(x=2)$
$= 0.17 + 0.28$
$= 0.45$

(c) $P(1 \le x \le 3) = P(x=1) + P(x=2) + P(x=3)$
$= 0.17 + 0.28 + 0.54$
$= 0.99$

(b) $P(x \ge 2) = P(x=2) + P(x=3)$
$= 0.28 + 0.54$
$= 0.82$

#29

a) $\mu = (0)(0.686) + (1)(0.195) + 2(0.077) + 3(0.022) + 4(0.013) + 5(0.007)$
$= 0.502$

$\sigma^2 = (0-0.502)^2(0.686) + (1-0.502)^2(0.195) + (2-0.502)^2(0.077) + (3-0.502)^2(0.022)$
$+ (4-0.502)^2(0.013) + (5-0.502)^2(0.007)$
$= 0.831$

$\sigma = \sqrt{\sigma^2} = \sqrt{0.831} = 0.911$

§4.2

#9 $n=124,\ p=0.26 \Rightarrow q=1-p=1-0.26=0.74$

Soln: $\mu = np = (124)(0.26) =$

$\sigma^2 = npq = (124)(0.26)(0.74) = 23.8576$

$\sigma = \sqrt{npq} = \sqrt{23.8576} = 4.8844$

#13 $n=6 \rightarrow$ not binomial since probability of "success" changes each time a ball is picked

#16 $n=6,\ p=39\% = 0.39 \rightarrow q=1-p=0.61$

Binomial distribution $\rightarrow P(x) = \dfrac{6!}{(6-x)!\,x!}(0.39)^x(0.61)^{6-x}$

a) $P(x=2) = \dfrac{6!}{(6-2)!\,2!}(0.39)^2(0.61)^{6-2} = 0.3158$

b) $P(x \geq 4) = P(x=4) + P(x=5) + P(x=6)$

$= \dfrac{6!}{2!\,4!}(0.39)^4(0.61)^2 + \dfrac{6!}{1!\,5!}(0.39)^5(0.61) + \dfrac{6!}{0!\,6!}(0.39)^6(0.61)^0$

$= 0.166$

c) $P(x<3) = P(x=0) + P(x=1) + P(x=2)$

$= \ldots$

$= 0.565$