

Answers to some Stat 310 Review Questions (book)

2.58

$$f_Y(y) = 2y, \quad 0 < y < 1.$$

2.68

$$f_A(a) = \frac{1}{2} \frac{\lambda}{\sqrt{\pi}} \frac{1}{\sqrt{a}} e^{-\lambda\sqrt{\frac{a}{\pi}}}, \quad 0 < a < \infty.$$

3.40

$X + Y$	0	1	2	3	4
p_{X+Y}	1/9	2/9	3/9	2/9	1/9

4.2

$$E(X) = \frac{n+1}{2}$$

$$E(X^2) = \frac{(n+1)(2n+1)}{6}$$

4.4

$$E(X) = \frac{\alpha}{\alpha-1}, \quad \alpha > 1.$$

$$E(X^2) = \frac{\alpha}{\alpha-2}, \quad \alpha > 2.$$

4.20.

$$E(\text{shorter/longer}) = 2 \log(2) - 1,$$

$$E(\text{longer/shorter}) = \text{does not exist.}$$

4.66

$$E(\text{no. examined}) = p \frac{n+1}{2} + (1-p)n.$$

4.74

$$M_X(t) = \frac{2te^t - 2e^t + 2}{t^2}.$$

4.80

$$M_X(t) = \left(\frac{pe^t}{1-qe^t} \right)^n.$$

4.88(c)

$$M(t) = G(e^t), \quad G(s) = M(\log(s)).$$