

Solutions, answers, and hints for selected problems

Complete solutions of some problems are given. Answers only are given for some other problems. For still others, only hints or partial solutions are given. Asterisks in “A Modern Approach to Probability Theory” by Fristedt and Gray identify the problems that are treated in this supplement.

For Chapter 13

13-15. if and only if the supports of the two uniform distributions have the same length

13-19. $k \rightarrow \frac{1-p}{1+p} p^{|k|}$; $v \rightsquigarrow \frac{(1-p)^2}{1+p^2-2p \cos v}$. [p is the parameter of the (unsymmetrized) geometric distribution.]

13-30. mean equals $\sum_{k=1}^m k^{-1}$ and variance equals $\sum_{k=1}^m k^{-2}$

13-34. *Hint:* Let

$$f(\alpha) = \int_0^\infty \frac{1}{u^2 + y^2} e^{-\alpha y} dy$$

and find a simple formula for $f'' + u^2 f$.

13-48.

$$\frac{2\pi}{\sqrt{a^2 - b^2}} \left(\frac{a - \sqrt{a^2 - b^2}}{b} \right)^{|n|}$$

13-72. yes