

**9.39** Let  $Y_1, Y_2, \dots, Y_n$  denote a random sample from a Poisson distribution with parameter  $\lambda$ . Show by conditioning that  $\sum_{i=1}^n Y_i$  is sufficient for  $\lambda$ .

- 9.64** Let  $Y_1, Y_2, \dots, Y_n$  be a random sample from a normal distribution with mean  $\mu$  and variance 1.
- a** Show that the MVUE of  $\mu^2$  is  $\hat{\mu}^2 = \bar{Y}^2 - 1/n$ .
  - b** Derive the variance of  $\hat{\mu}^2$ .

- 10.6** We are interested in testing whether or not a coin is balanced based on the number of heads  $Y$  on 36 tosses of the coin. ( $H_0 : p = .5$  versus  $H_a : p \neq .5$ ). If we use the rejection region  $|y - 18| \geq 4$ , what is
- a** the value of  $\alpha$ ?
  - b** the value of  $\beta$  if  $p = .7$ ?

- 10.18** The hourly wages in a particular industry are normally distributed with mean \$13.20 and standard deviation \$2.50. A company in this industry employs 40 workers, paying them an average of \$12.20 per hour. Can this company be accused of paying substandard wages? Use an  $\alpha = .01$  level test.