B+

Date.

section 6.1

1.(a) mean value $\hat{x} = \frac{\Sigma x_i}{n} = \frac{219.8}{27} = 8.14$

(b) the median value 9

(c) $\sigma = \sqrt{\sigma^2} = \sqrt{\frac{E(x^2)}{n} - \bar{x}^2} = 1.66$

d, $\hat{p} = \frac{4}{27} = 0.148$

e, $\frac{\sigma}{\mu} = \frac{1.66}{8.14} = 0.204$.

8. (a) $\hat{p} = \frac{80-12}{80} = 0.85$

(b) $\hat{p} = (0.85)^2 = 0.7225$

9. (a) $E(\bar{x}) = \mu = \frac{0 \times 18 + 1 \times 37 + \cdots + 7 \times 1}{150} = 2.11$

(b) $\sigma = \frac{s}{\sqrt{n}} = \sqrt{\frac{2.11}{n}} = 0.119$

~~13. $f(x,\theta) = 0.5(1+\theta x)$ $-1 \le x \le 1$~~

~~$E(x) = x f(\theta x) = \int_{-1}^{1} x f(x,\theta) dx$~~

~~$= \int_{-1}^{1} \theta x\, dx + \int 0.5 x\, dx$~~

~~$= \frac{\theta x^2}{2}\Big|_{-1}^{1} + 0.5$~~

~~$=$~~

13. $E(x) = \int_{-1}^{1} x f(x,\theta) dx = \int_{-1}^{1} 0.5 x (1+\theta x) dx$

$= \int_{-1}^{1} 0.5 x\, dx + \int_{-1}^{1} 0.5 \theta x^2 dx$

$= \frac{x^2}{4}\Big|_{-1}^{1} + \frac{x^3 \theta}{6}\Big|_{-1}^{1}$

$= \frac{\theta}{3}$

$\bar{x} = \mu = E(x) = \frac{\theta}{3}$. $\theta = 3\bar{x}$

20. (a) $p = \frac{X}{n} = \frac{3}{20}$

(b) yes.

(c) $p' = (1-p)^5 = 0.44$.

21. (a) $E(\bar{x}) = \frac{1}{n}\sum x_i$ $\quad E(x^2) = V(x) + [E(x)]^2$

$= \beta \cdot \Gamma(1+\frac{1}{\alpha})$ $\quad = \beta^2\{\Gamma(1+\frac{2}{\alpha}) - [\Gamma(1+\frac{1}{\alpha})]^2\} + \beta^2[\Gamma(1+\frac{1}{\alpha})]^2$

$\beta = \frac{\frac{1}{n}\sum x_i}{\Gamma(1+\frac{1}{\alpha})}$ $\quad = \beta^2\Gamma(1+\frac{2}{\alpha})$

$= \frac{1}{n}\sum x_i^2$

$$\frac{1}{n}\sum x_i^2 = \frac{(\frac{1}{n}\sum x_i)^2\Gamma(1+\frac{2}{\alpha})}{[\Gamma(1+\frac{1}{\alpha})]^2}$$

Thus α can be solve if $x_1 \cdots x_n$ is determind.

(b) $\beta = \frac{28}{\Gamma(1+\frac{1}{\alpha})}$

$\frac{\frac{1}{n}\sum x_i^2}{\bar{x}^2} = \frac{\Gamma(1+\frac{2}{\alpha})}{[\Gamma(1+\frac{1}{\alpha})]^2} = 1.0522 \approx \frac{1}{0.95}$ $\quad \alpha = 5$ $\quad \beta = \frac{28}{\Gamma(1.2)}$

29. (a) $E(x) = \frac{1}{n}\sum x_i = \bar{x}$ $\quad V(x) = \frac{1}{\lambda^2}$ $\quad E(x^2) = V(x) + [E(x)]^2$

$= \frac{1}{\lambda}$ $\quad = \frac{2}{\lambda^2} = \frac{1}{n}\sum x_i^2$

32. (a) $F(x) = F(x_1 < Y, x_2 < Y \cdots x_n = Y) = [\int_0^y \frac{1}{\theta} dx]^n = (\frac{y}{\theta})^n$

$f_Y(y) = \frac{n y^{n-1}}{\theta^n}$

(b) $E(Y) \int_0^\theta y \cdot f_Y(y)dy = \int \frac{ny^n}{\theta^y} dy = \frac{n\, y^{n+1}}{n+1\, \theta^y}\Big|_0^y =$