Lec 12/7

Wednesday, December 7, 2016 8:05 AM

Exam: Mon 8 - 9:45

1.5 x length of exams 1 and 2

1/3 ch 7 or 8

2 sheets of notes!

$X_i \overset{iid}{\sim} Exp(\theta)$ $\quad f_X(x_i) = \frac{1}{\theta} e^{-x_i/\theta}$ $\quad F_X(x) = 1 - e^{-x/\theta}$

$Y = \max\{X_1, \dots, X_n\}$

$$f_Y(y) = n f_X(y) \left[F_X(y)\right]^{n-1}$$

$$= \frac{n}{\theta} e^{-y/\theta} \left[1 - e^{-y/\theta}\right]^{n-1} \quad \text{for } y > 0.$$

$W = Y_2$

$$f_W(w) = \frac{n!}{(n-2)!} f_Y(w) \left[F_X(y)\right]^1 \left[1 - F_X(y)\right]^{n-2}$$

$$= \frac{n(n-1)}{\theta} e^{-y/\theta} \left[1 - e^{-y/\theta}\right] \left[e^{-y/\theta}\right]^{n-2}$$

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