Homework 2-361

Due date February 9

(1) p110 no 53
(2) p110 no 55 c)
(3) p111 no 63
(4) p115 no 1
(5) p117 no 15
(6) (Extra credit separate page) Read Example 5b) Is the argument presented on page 99 correct?

Homework 2-361

Due date February 16

(1) (extra credit) p118 no 18
(2) p-117 no 16
(3) p-119 no 23
(4) p-171 no 2
(5) p-171 no 3
(6) p-171 no 7

Homework 4-361

(1) prob 20 (p=173)
(2) prob 23 (p=173)
(3) prob 19 (p=173)
(4) prob 31 (p=173+..)
(5) theo. no 9 (180)
(6) theo. no 11 (181)

Homework 5

Due date: March, Friday 8

(1) Let $c < d$ and X be uniformly distributed on $[c, d]$, i.e.

$$P(X \leq a) = \begin{cases} 0 & \text{if } a \leq c \\ \frac{a-c}{b-c} & \text{if } c < a \leq b \\ 1 & \text{if } a \geq c \end{cases} .$$

Find EX^3 and the moment generating function Ee^{tX}.

(2) No 4 page 228

(3) No 11 page 229

(4) No 13 page 229

Homework 7-361

Due date March 19

(1) Let X be normal distributed with parameters $(0, 1)$ and defined ion $\mathbb{R}$ with $P(A) = \int_A e^{-\frac{x^2}{2}} \frac{dx}{\sqrt{\pi}}$. Consider $\Omega = \{0, 1\} \times \mathbb{R}$ and $0 < p < 1$. We use the probability measure

$$P(A) = pP(A_0) + (1-p)P(A_1) ,$$

where $A_0 = \{x \in \mathbb{R} : (0, x) \in A\}$ and $A_1 = \{x \in \mathbb{R} : (1, x) \in A\}$. Calculate the density for

(a) $X(i, x) = \begin{cases} x & i = 0 \\ 0 & i = 1 \end{cases} .$

(b) $X(i, x) = \begin{cases} x & i = 0 \\ x^2 & i = 1 \end{cases} .$

(2) Problem 16 page=238

(3) Problem 14 page=238

(4) Problem 13 page=291

(5) Problem 17 page=292

Homework 8-361

Due date April 2

(1) p=295 51

(2) p=295 52

(3) p=295 53

(4) p=296 11

(5) p=297 17

(6) Let Y_ε be normal with variance ε^2. Let X be independent of Y.

   (a) Show that
   $$f_{X+Y_\varepsilon}(x) \ \le \ \frac{1}{\sqrt{2\pi\varepsilon}} \,.$$

   (b) Let X be a random variable such that $Prob(X=1) = \frac{1}{2} = P(X=0)$. Show that
   $$\lim_{\varepsilon\to 0} f_{X+Y_\varepsilon}(x) \ = \ 0$$
   for $x \neq 0$ and $x \neq 1$. (Hint: $\lim_{t\to\infty} te^{-at} = 0$ for every $a > 0$.)

Homework 9-361

Due date April 19

(1) p=297 no 16

(2) p=383 no 25

(3) p=385 no 48

(4) p=385 no 50

Homework 10-361

Due date April 23

(1) p=385 no 51

(2) p=393 no 25

(3) p=393 no 26

(4) p=393 no 27

Homework 11-361

Due date April 30

(1) p=397 pb 3

(2) p=382 pb 17

(3) p=386 pb 60

Homework 4-361

(1) prob 20 (p=173)

(2) prob 23 (p=173)

(3) prob 19 (p=173)

(4) prob 31 (p=173+..)

(5) theo. no 9 (180)

(6) theo. no 11 (181)