Homework 6 Answers

BSTA 550

Non-textbook problems

- #1:

Textbook problems

There are answers at the back of the book!! Selected answers (or hints) not provided at the end the book:

- Calculus Review
  - (a) $c(\frac{y^2}{2} + y^2)$
  - (b) $\frac{8}{9}xy^2 + \frac{5}{9}y^4$
  - (c) $\frac{8}{9}x^2y + \frac{20}{9}xy^3$
  - (d) $-2e^{-2y} + 2e^{-y}$
  - (e) xe^{-x}
  - (f) $-\frac{2}{3}(e^{-7x} - e^{-4x})$
  - (g) $\frac{9}{2}$
  - (h) $\frac{9}{2}$
  - (i) $\frac{9}{2}$
  - (j) $\frac{9}{2}$
- Chapter 24
  - # 2: (a) Discrete (b) Discrete (c) Continuous

- # 22:

$$f_X(x) = \begin{cases} 0 & x < 0 \\ \frac{7x}{4} & 0 \le x \le 1 \\ 0 & 1 < x < 7 \\ \frac{1}{8} & 7 \le x \le 8 \\ 0 & x > 8 \end{cases}$$

- Chapter 25
  - # 4: 7/16
  - # 8: (a) $\frac{25}{228}$ (b) $f_X(x) = \frac{1}{12}(x+1)$, for $0 \le x \le 4$ (c) $f_Y(y) = \frac{3}{76}(y^2+1)$, for $0 \le y \le 4$
  - # 18: 5/6
  - # 24: (a) $f_X(x) = -2e^{-2x} + 2e^{-x}$, for $x \ge 0$ (b) $f_Y(y) = 2e^{-2y}$, for $y \ge 0$
- Chapter 26
  - # 12: (b) $\frac{233}{256}$ (c) $\frac{65}{256}$ (d) $\frac{1}{512}$
  - # 20: (a) Yes. (b) $\frac{15}{16}$
  - NTB # 3: (b) 0.09999546 (d) $f_Z(z) = \left(\frac{11}{5} - \frac{2z}{5}\right)e^{-2z}$, for what values of z?
- Chapter 27
  - # 6: $f_{X|Y}(x|y) = \frac{e^{-x/4-y/5}}{4(e^{-y/5}-e^{-9y/20})}$, for $0 < x < y$
  - # 8: $f_{X|Y}(x|y) = \frac{1-x^2}{1-y-\frac{(1-y)^3}{3}}$, for $0 \le x, 0 \le y, x+y \le 1$
  - # 12: (a) $f_{X|Y}(x|y) = \frac{1}{2}$ (c) $\frac{4}{7}$