I’ll make each homework assignment worth 10 points, so that when I count your best 10 of 13 assignment scores, your overall homework score will be out of 100 points possible. For this assignment, three of the five problems to be turned in will be selected for grading. (Two of the graded problems will be worth 3 points apiece, and the other one will be worth 4 points. I announced in class that Problem 4 will be considered to be an extra credit problem. It won’t be one of the three selected for grading as part of the regular assignment. You should work on this extra credit problem entirely on your own and not get assistance from anyone, should you choose to try the problem.)

1) Consider Exercise 3 on p. 356 of the text and obtain \( P(X + Y = 3) \).
2) Do Exercise 18 on p. 358 of the text. (Note: For convenience, denote the product \( XY \) by \( V \).)
3) Do Exercise 2 on p. 356 of the text. (Be sure to justify your answer.)
4) Consider independent random variables \( X_1 \) and \( X_2 \), each having pdf

\[
f(x) = \frac{1}{x^2} I_{(1, \infty)}(x),
\]

and obtain the density of \( T = X_1 + X_2 \).
5) Do Exercise 3 on p. 371 of the text.
6) Do Exercise 11 on p. 408 of the text. (Hint: Use geometry instead of integration. (Look up formula for the volume of a sphere if you have to.))
7) Do part (b) of Problem 4 on p. 425 of the text. (Use the fact that \( c = 1/2 \) if you wish, although the value of \( c \) cancels out and it’s really not needed.)
8) Do part (a) of Problem 4 on p. 425 of the text.
9) Do Exercise 8 on p. 372 of the text.
10) Do Exercise 1 on p. 420 of the text.

*Turn in solutions for Problems 3 through 7, but not the others.*