

Name: \_\_\_\_\_

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ISyE 2027  
Test 2

Calculators, notes, and books are not allowed. Please show your work in the bluebook and transfer your answers to the back of this sheet. "See bluebook" is not an answer. When finished, make sure your name is on the bluebook, the test, and the answer sheet, place the test/answer sheet into the blue book, and hand them in.

- (30 points) Let  $X$  be a discrete r.v. with p.m.f.  $\Pr\{X = k\} = |k|/4$  for  $-2 < k \leq 2$ . Compute (a)  $\Pr\{X \leq 0\}$ , (b) the mean of  $X$ , and (c)  $E[X^2]$ .
- (30 points) Let  $Y$  be a continuous r.v. with p.d.f.  $f(s) = 2 - 2s$  for  $0 < s < 1$ . Compute (a)  $\Pr\{Y < 1/2\}$ , (b) the mean of  $Y$ , and (c)  $E[Y^2]$ .
- (30 points) Suppose that a worker needs to walk a random distance  $L$  feet to retrieve an item at the location. Assume that it takes 10 seconds to remove the item from the container. Assume that the total time  $T = L/2 + 10$ . Assume that  $L$  has a mean of 60 feet and a variance of 36 square feet. Determine (a) the mean of  $T$ , (b) the variance of  $T$ , (c) the speed the worker walks in feet per second.
- (30 points) Suppose that  $\Pr\{X = i, Y = j\} = ij/18$  for  $0 < i < 3$  and  $0 < j \leq 3$ . Determine (a)  $\Pr\{X = 1\}$ , (b)  $\Pr\{Y = 1 \mid X = 1\}$  (c)  $E[X^2Y]$ .
- (30 points) Suppose that you are dealt 4 cards from a standard deck. Let  $X$  be the number of clubs you receive, and  $Y$  the number of hearts you receive. Determine the joint p.m.f. of  $X$  and  $Y$ . Please leave your answer a form with terms  $\binom{n}{k}$ .