QUESTION 2 35 minutes 30 points

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|---|---|---|---|---|---|---|---|---|---|
| 10150261 | A | 40180031 | A | 40180229 | A | 40190017 | A | 40190219 | E |
| 10150281 | B | 40180038 | B | 40180235 | B | 40190018 | B | 40190230 | A |
| 10160263 | C | 40180039 | C | 40180240 | C | 40190020 | C | 40190232 | B |
| 40090444 | D | 40180040 | D | 40180244 | D | 40190036 | D | 40190238 | C |
| 40150420 | E | 40180044 | E | 40180254 | E | 40190077 | E | 40190242 | D |
| 40160749 | A | 40180056 | A | 40180255 | A | 40190085 | A | 40190251 | E |
| 40170218 | B | 40180063 | B | 40180260 | B | 40190098 | B | 40190254 | A |
| 40170411 | C | 40180065 | C | 40180527 | C | 40190100 | C | 40190431 | B |
| 40170812 | D | 40180098 | D | 40180619 | D | 40190208 | D | 40190517 | C |
| 40180003 | E | 40180117 | E | 40180752 | E | 40190209 | E | 40190617 | D |
| 40180009 | A | 40180205 | A | 40180804 | A | 40190212 | A | 40190736 | E |
| 40180010 | B | 40180206 | B | 40180806 | B | 40190213 | B | 40190737 | A |
| 40180015 | C | 40180217 | C | 40180808 | C | 40190216 | C | 40190746 | B |
| 40180020 | D | 40180225 | D | 40180925 | D | 40190217 | D | 40190748 | C |
| 40190754 | E | 40190791 | A | 40190912 | B | | | | |

GROUP: A GROUP: B GROUP: C GROUP: D GROUP: E

GROUP: A

2) Consider a random variable Z with a uniform probability density function given as $U_Z(-1,0)$ and X=2Z+1.

a) Find and plot the probability density function $f_X(x)$.
b) Find and plot the cumulative distribution function $F_X(x)$.
c) Find E[Z].
d) Find E[X].
e) Find the correlation of Z and X.
   i. Are they correlated?
   ii. Are they independent? Why?

GROUP: B

2) Consider a random variable Z with a uniform probability density function given as $U_Z(-1,0)$ and X=4Z+1.

a) Find and plot the probability density function $f_X(x)$.

b) Find and plot the cumulative distribution function $F_X(x)$.

c) Find E[Z].

d) Find E[X].

e) Find the correlation of Z and X.

   i. Are they correlated?

   ii. Are they independent? Why?

GROUP: C

2) Consider a random variable Z with a uniform probability density function given as $U_Z(-1,0)$ and X=2Z+2.

a) Find and plot the probability density function $f_X(x)$.

b) Find and plot the cumulative distribution function $F_X(x)$.

c) Find E[Z].

d) Find E[X].

e) Find the correlation of Z and X.

   i. Are they correlated?

   ii. Are they independent? Why?

GROUP: D

2) Consider a random variable Z with a uniform probability density function given as $U_Z(-1,0)$ and X=4Z+2.

a) Find and plot the probability density function $f_X(x)$.

b) Find and plot the cumulative distribution function $F_X(x)$.

c) Find E[Z].

d) Find E[X].

e) Find the correlation of Z and X.

   i. Are they correlated?

   ii. Are they independent? Why?

GROUP: E

2) Consider a random variable Z with a uniform probability density function given as $U_Z(-1,0)$ and X=4Z+4.

a) Find and plot the probability density function $f_X(x)$.
b) Find and plot the cumulative distribution function $F_X(x)$.
c) Find E[Z].
d) Find E[X].
e) Find the correlation of Z and X.
   i. Are they correlated?
   ii. Are they independent? Why?