

Math 262

Section 4.1

Day 28

1. A cafeteria has three meal options: pizza, burgers, and salad bar. Three students each choose one option independently at random (equally likely to choose any option). Let X be the number (of the 3) who choose pizza, and let Y be the number who choose the salad bar.

(a) What is the joint pmf of X and Y ?

(b) What are the marginal pmfs of X and Y ?

(c) Are X and Y independent? Why or why not?

2. Let X and Y have joint pdf $f(x, y) = 6xy^2$ for $0 \leq x \leq 1$ and $0 \leq y \leq 1$.

(a) Verify that $f(x, y)$ is a joint pdf.

(b) What is $f_X(x)$?

(c) What is $P(X \leq Y)$?

(d) Are X and Y independent? Why or why not?