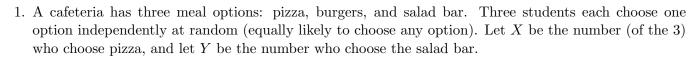
Sections 4.1 and 4.2 Day 19

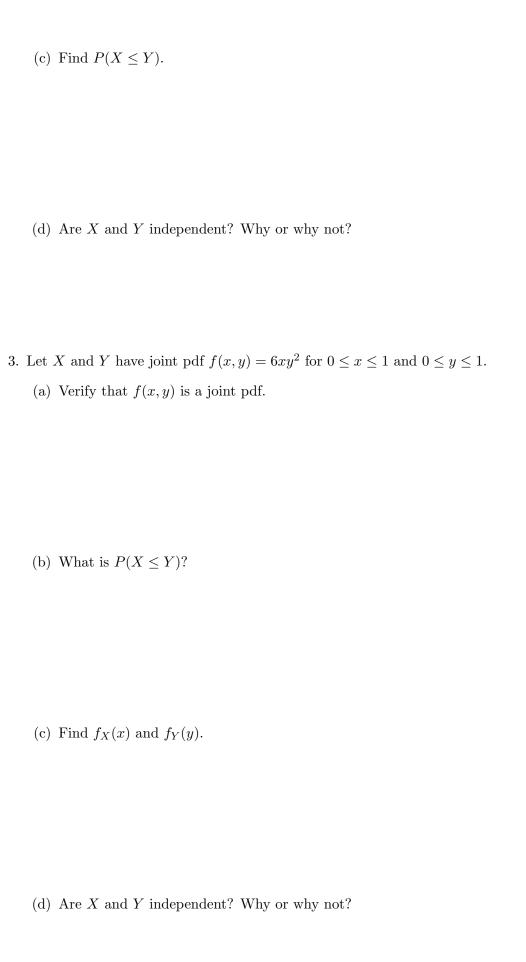


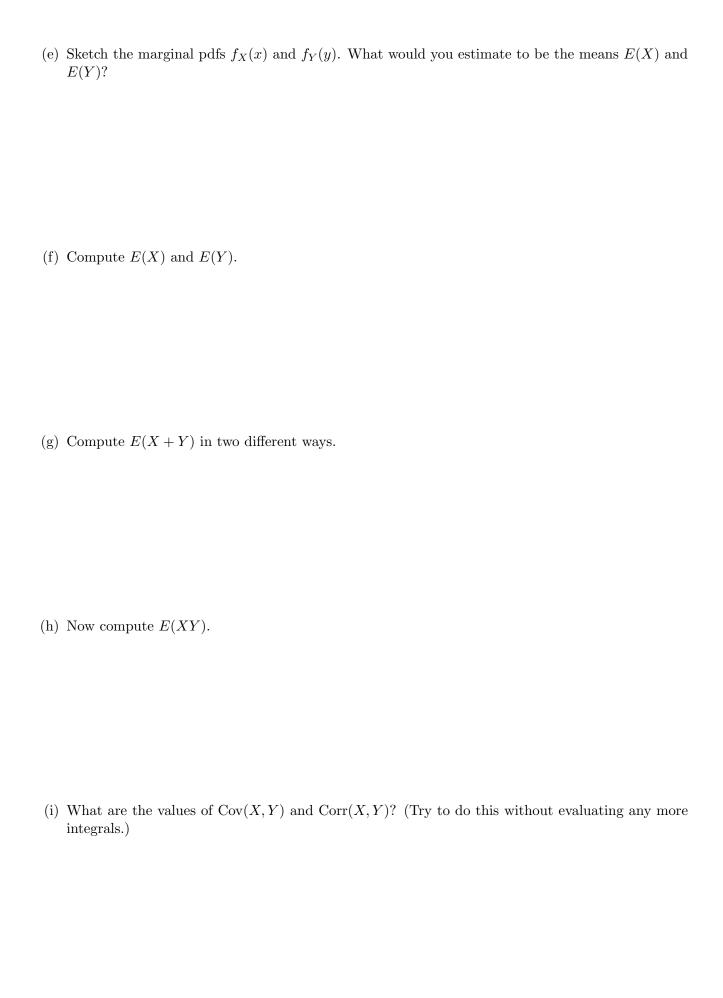
(a) What is the joint pmf of X and Y? What are the marginal pmfs of X and Y?

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

- 2. Suppose a particle is randomly located in the square  $0 \le x \le 1$ ,  $0 \le y \le 1$ . That is, if two regions within the square have equal area, then the particle is equally likely to be in either region. Let (X,Y) be the coordinates of the particle.
  - (a) What is the joint density function of X and Y?

(b) Find  $P(X \le 0.2, 0.1 \le Y \le 0.5)$ .





4. Let X and Y have joint pdf $f(x,y) = 3x + 3y$ for $0 \le x$ , $0 \le y$ , and $x + y \le 1$ .  (a) Sketch the joint pdf and verify that the volume underneath is 1.
(b) What values of $X$ and $Y$ are most likely? What values are not so likely?
(c) Compute the following, using technology to evaluate integrals: $\bullet \ E(X+Y)$
ullet $E(XY)$
ullet $E(X)$
ullet $E(Y)$

(d) What is Cov(X, Y)?