

Math 115 – Exam 2 Extra Problems

Bivariate Distributions

1. Suppose the joint p.d.f. of a pair of random variables on the rectangle $0 < x < 2$, $0 < y < 1$ is given by $f(x,y) = 1/2$. Compute $\text{Prob}(X > Y)$.
2. Suppose the joint p.d.f. of a pair of random variables on the rectangle $0 < x < 2$, $0 < y < 1$ is given by $f(x,y) = xy$. Compute $\text{Prob}(X > Y)$.
3. Suppose the joint p.d.f. of a pair of random variables on the first quadrant $0 < x$, $0 < y$ is given by $f(x,y) = 6\exp(-(2x+3y))$ ($\exp(x) = e^x$). Assume $a > 0$. Compute $\text{Prob}(X > a)$, $\text{Prob}(Y > a)$, $\text{Prob}(\min(X,Y) > a)$, $\text{Prob}(X > Y)$.

Ans.

#1 $3/4$,

#2 $7/8$,

#3 $\exp(-2a)$, $\exp(-3a)$, $\exp(-5a)$, $3/5$,