

Extra

Extra exercises for Joint density

You can use the joint densities below to compute

(i) marginal pdf's for X and Y ,

(ii) conditional pdf's;

(iii) probabilities of form $P(0 < X < 0.5, 0 < Y < 0.25)$ (you can change the numbers), or $P(Y < 3X)$, $P(X + Y < 1)$

(iv) $E(X)$, $E(XY)$, $V(X)$, $Cov(X, Y)$, ρ etc.

1. $f(x, y) = \frac{1}{x}$, $0 < y < x, 0 < x < 1$.
2. $f(x, y) = 6x$, $0 < x < 1, 0 < y < 1 - x$
3. $f(x, y) = y^2 e^{-y(x+1)}$, $x \geq 0, y \geq 0$
4. $f(x, y) = xye^{-(x+y)}$, $x > 0, y > 0$
5. $f(x, y) = 2e^{-(x+y)}$, $0 < x < y, 0 < y$
6. $f(x, y) = \frac{3}{2}y^2$, $0 < x < 2, 0 < y < 1$
7. $f(x, y) = c(x + y)$, $0 < x < 1, 0 < y < 1$
8. $f(x, y) = 2$, $0 < x < y < 1$
9. $f(x, y) = ye^{-xy-y}$, $x > 0, y > 0$
10. $f(x, y) = 4xy$, $0 < x < 1, 0 < y < 1$
11. $f(x, y) = \frac{2}{3}(x + 2y)$, $0 < x < 1, 0 < y < 1$
12. $f(x, y) = C(1 - x - y)$, $0 < x < 1, 0 < y < 1, 0 < x + y < 1$