marginal distributions

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Let X, Y be jointly distributed continuous random variables with joint pdf $f(x, y)$.

The marginal pdf's of X and Y are respectively given by the following:

$$f(x) = \int_{-\infty}^{\infty} f(x, y)\,dy$$

$$f(y) = \int_{-\infty}^{\infty} f(x, y)\,dx$$

Note this is exactly like for joint discrete random variables, with integrals instead of sums.

theoretical joint distributions

Find the marginal pdf $f(x)$ and $f(y)$ given the joint pdf:

$$f(x, y) = \begin{cases} x + \dfrac{3}{2}y^2 & \text{for } 0 \leq x \leq 1, 0 \leq y \leq 1 \\ 0 & \text{otherwise} \end{cases}$$