

Answer for Question #71378

$$f_X(x) = \int_0^1 (x + y) dy = x + \frac{1}{2}$$

$$f_Y(y) = \int_0^1 (x + y) dx = y + \frac{1}{2}$$

$$E[X] = \int_0^1 x \left(x + \frac{1}{2} \right) dx = \frac{7}{12}$$

$$E[Y] = \int_0^1 y \left(y + \frac{1}{2} \right) dy = \frac{7}{12}$$

$$E[XY] = E[X]E[Y] - K_{XY}, \quad K_{XY} = \int_0^1 \int_0^1 xy(x + y) dy dx = \frac{1}{3}$$

$$E[XY] = \left(\frac{7}{12} \right)^2 - \frac{1}{3} = \frac{49}{144} - \frac{48}{144} = \frac{1}{144}$$

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