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We can rewrite the density

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$$f(x, y)$$

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$$f(x, y) = 2e^{-2x}3e^{-3y}$$

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We can rewrite the density

$$f(x, y) = 2e^{-2x}3e^{-3y}$$

to see that  $X$  and  $Y$  are

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We can rewrite the density

$$f(x, y) = 2e^{-2x}3e^{-3y}$$

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$$f(x, y) = 2e^{-2x}3e^{-3y}$$

to see that  $X$  and  $Y$  are independent exponentially distributed random variables

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We can rewrite the density

$$f(x, y) = 2e^{-2x}3e^{-3y}$$

to see that  $X$  and  $Y$  are independent exponentially distributed random variables which basically solves

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Question a) The area  $B$  page

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Question a) The area  $B$  page 349 is defined by the rectangle

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Question a) The area  $B$  page 349 is defined by the rectangle  $0 < u < x, 0 < v < y$ .

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Question a) The area  $B$  page 349 is defined by the rectangle  $0 < u < x, 0 < v < y$ .

$$P(X \leq x, Y \leq y)$$

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Question a) The area  $B$  page 349 is defined by the rectangle  $0 < u < x, 0 < v < y$ .

$$P(X \leq x, Y \leq y) = \int_0^x$$

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Question a) The area  $B$  page 349 is defined by the rectangle  $0 < u < x, 0 < v < y$ .

$$\begin{aligned} P(X \leq x, Y \leq y) &= \int_0^x \int_0^y f(u, v) dv du = \int_0^x \int_0^y 2e^{-2u}3e^{-3v} dv du \\ &= \int_0^x 2e^{-2u} (1 - e^{-3y}) du \end{aligned}$$

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Question b)

$$f_X(x)$$

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Question b)

$$f_X(x) = 2e^{-2x}$$

Question c)

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Question d) The variables  $X$  and  $Y$  are

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for all  $(x, y)$ .

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