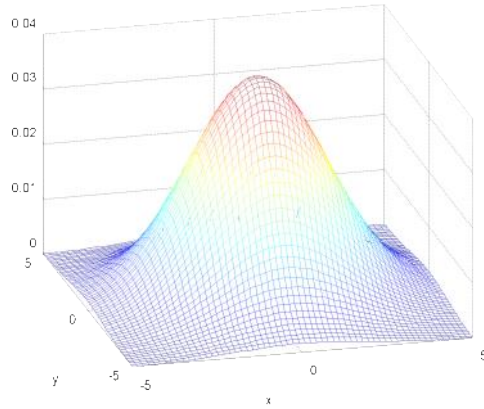


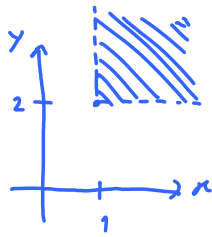
Tutorial on Sep 27, 2013 - part 2

Friday, September 27, 2013 2:14 PM

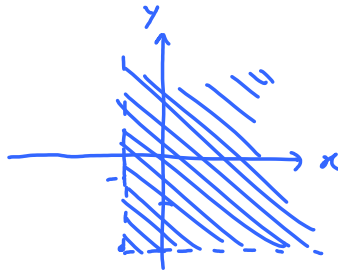
Joint pdf \rightarrow
 $f_{X,Y}(x,y)$



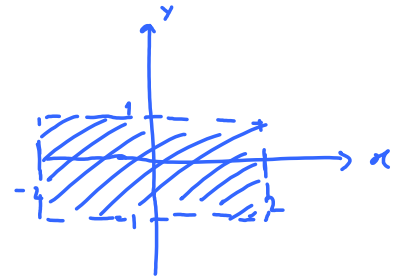
$$P[X > 1, Y > 2]$$



$$P[X > -1, Y > -2]$$



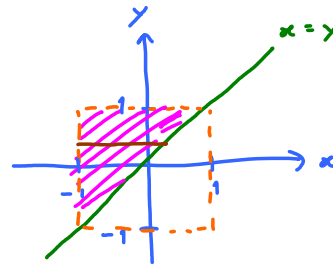
$$P[-2 < X < 2, -1 < Y < 1]$$



$$P[-1 < X < Y < 1]$$

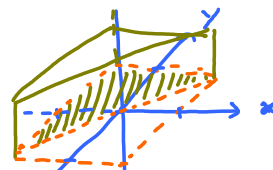
$$= \int_{-1}^1 \int_x^1 f_{X,Y}(x,y) dy dx$$

$$= \int_{-1}^1 \int_{-1}^y f_{X,Y}(x,y) dx dy$$



Example:

Suppose $f_{X,Y}(x,y) = \begin{cases} c, & -1 < x < y < 1, \\ 0, & \text{otherwise.} \end{cases}$



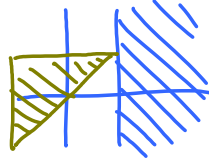
$f_{X,Y}(x,y) = \begin{cases} c, & \text{otherwise.} \end{cases}$



a) $c = \frac{1}{2}$

$$\iint f_{X,Y}(x,y) dx dy = 2 \times c = 1$$

b) $P[X > 1] = 0$



This corresponds to integration outside of the region of non-zero pdf.