

This time: joint,
 next time: marginal,
 next time: conditional

(X, Y) discrete
 you have

AMS 131
 7 May 19

$f_{X,Y}(x,y)$

①

$$\underline{\underline{f(x)}} = \sum_{\text{all } y} f_{X,Y}(x,y)$$

A, B independent $\rightarrow P(A \text{ and } B)$
 iff
 iff statements $= P(A) \cdot P(B)$

$$\begin{array}{ccc}
 \downarrow & & \downarrow \quad \downarrow \\
 \underline{\underline{P(A \text{ and } B)}} & = & P(A) \cdot P(B|A) \\
 & = & P(B) P(A|B)
 \end{array}$$