



$$\Pr (X+Y > \frac{1}{2} \cap X \in [0,1] \cap Y \in [0,1])$$

$$= \int_0^{0.5} \int_{0.5-y}^1 f_{X,Y}(x,y) dx dy \quad \textcircled{1}$$

$$+ \int_{0.5}^1 \int_0^1 f_{X,Y}(x,y) dx dy \quad \textcircled{2}$$

Alternatively,  $\Pr (X+Y > \frac{1}{2} \cap X \in [0,1] \cap Y \in [0,1])$

$$= 1 - \Pr (X+Y \leq \frac{1}{2} \cap X \in [0,1] \cap Y \in [0,1])$$

$$= 1 - \int_0^{0.5} \int_0^{0.5-y} f_{X,Y}(x,y) dx dy$$