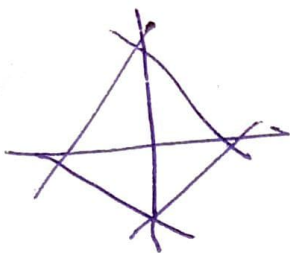


$$|x| + |y| \leq 1$$



$$x+y=1$$

$$x+y=-1$$

$$x-y=1$$

$$x-y=-1$$

$$\text{let } x-y=u \quad \text{and } x+y=v$$

$$\Rightarrow (-1 \leq u \leq 1 \quad \text{and} \quad -1 \leq v \leq 1)$$

$$|J| = \frac{1}{2} \rightarrow \text{check}$$

$$\int_0^1 \int f(x-y) dx dy = \int_{u=-1}^1 \int_{v=-1}^1 f(u) |J| du dv$$

$$= 2 \times \frac{1}{2} \int_{u=-1}^1 f(u) du$$

$$= \int_{u=-1}^1 f(u) du$$

replace u by x

option (i) is correct