Sia $T = \left\{(x,y) \in \mathbb{R}^2 : x \le y \le 3x,\ 1 \le y - \frac{x}{2} \le \frac{3}{2}\right\}$ ②

allora se

$$Q = \left\{(\xi,\eta) \in \mathbb{R}^2 : 1 \le \eta \le 3,\ 1 \le \xi \le 3/2\right\}$$

si ha $T = \Phi(Q)$.

Usando la formula di cambiamento di variabili si ottiene quindi

$$\iint_T \cos\left(\frac{\pi x}{2y - x}\right) dx\,dy = \iint_Q \cos\left(\frac{\pi}{2\eta - 1}\right) \frac{1}{(\eta - \frac{1}{2})^2}\, d\xi\,d\eta$$

$$= \left(\int_1^{3/2} d\xi\right)\left(\int_1^3 \cos\left(\frac{\pi}{2\eta - 1}\right) \frac{1}{(\eta - \frac{1}{2})^2}\, d\eta\right)$$

$$\frac{\pi}{4} + \frac{5}{4\pi} \int_{2\pi/5}^{2\pi} \cos\left(\frac{t}{2}\right) dt = -\frac{5}{4\pi} \operatorname{sen} \frac{\pi}{5}$$

$t = \frac{\pi}{\eta - \frac{1}{2}}$