

1

$$G(u, v) = (3u + v, u - 2v)$$

$$\begin{aligned} J &= \begin{vmatrix} \frac{\partial x}{\partial u} & \frac{\partial x}{\partial v} \\ \frac{\partial y}{\partial u} & \frac{\partial y}{\partial v} \end{vmatrix} \\ &= \begin{vmatrix} 3 & 1 \\ 1 & -2 \end{vmatrix} \\ &= -7 \end{aligned}$$

2

$$R = [0, 3] \times [0, 5]$$

$$\begin{aligned} &\iint_P 1 dA \\ &= \iint_{G(R)} 1 dA \\ &= \iint_R 1 |J| dA \\ &= \iint_R 7 dA \\ &= 105 \end{aligned}$$