1027.

$$A = \square_{\square}(xdx + ydy)\arctan\frac{y}{x}$$

$\square : \{$ Räta linjen $(1,\ 0) \ \square\ (2,2)$.

Slut med räta linjen från $(1,\ 0)$ till $(2,0)$, kurvan A,

och vidare rätlinjigt till $(2,2)$, kurvan B.

Inneslutna området betecknas D.

Greens formel tillämpas.

$$\int_{\square^{\square}\square A\square B}(xdx+ydy)\arctan\frac{y}{x}=$$

$$=\iint_D\left[\frac{\partial}{\partial x}\left(y\arctan\frac{y}{x}\right)-\frac{\partial}{\partial y}\left(x\arctan\frac{y}{x}\right)\right]dxdy=$$

$$=\iint_D\left[y\frac{\frac{-y}{x^2}}{1+\left(\frac{y}{x}\right)^2}-x\frac{\frac{1}{x}}{1+\left(\frac{y}{x}\right)^2}\right]dxdy$$

$$\square_{\square^{\square}\square A\square B}(xdx+ydy)\arctan\frac{y}{x}=\square\square\square_{D}\square 1dxdy$$

$$\square_{\square^{\square}\square A\square B}(xdx+ydy)\arctan\frac{y}{x}=\square\frac{1\cdot 2}{2}=\square 1$$

$$\square_{A}(xdx+ydy)\arctan\frac{y}{x}=0$$

$$\int_B (xdx + ydy)\arctan\frac{y}{x} = \int_{t=0}^{2} t\arctan\frac{t}{2}\,dt$$

$$\int_B (xdx + ydy)\arctan\frac{y}{x} = \left[\frac{t^2}{2}\arctan\frac{t}{2}\right]_{t=0}^{2} - \int_{t=0}^{2}\frac{t^2}{2}\,\frac{\frac{1}{2}}{1+\left(\frac{t}{2}\right)^2}\,dt$$

$$\int_B (xdx + ydy)\arctan\frac{y}{x} = 2\,\frac{\pi}{4} - \int_{t=0}^{2}\frac{t^2}{4+t^2}\,dt$$

$$\square_{B}(xdx + ydy)\arctan\frac{y}{x} = \frac{\square}{2}\square 2 + \square 2\arctan\frac{t}{2}\square_{t=0}^{2}$$

$$\square_{B}(xdx + ydy)\arctan\frac{y}{x} = \square\square 2$$

$$\square \square_{\square} + \square_{A} + \square_{B} = \square 1$$

$$\square_{\square}(xdx + ydy)\arctan\frac{y}{x} = 0 + \square\square 2 + 1 = \square\square 1$$