$\mathbf{F}(x,y) = \left\langle y - \ln(x^2+y^2), 2\arctan\left(\frac{y}{x}\right)\right\rangle$ and the region D enclosed by C is the disk with radius 4 centered at $(3,4)$. C is oriented positively, so

$$\begin{aligned}
\int_C \mathbf{F}\cdot d\,\mathbf{r} &= \int_C (y - \ln(x^2+y^2))\,dx + \left(2\arctan\left(\frac{y}{x}\right)\right)\,dy \\
&= \iint_D \left[\frac{\partial}{\partial x}\left(2\arctan\left(\frac{y}{x}\right)\right) - \frac{\partial}{\partial y}\left(y - \ln(x^2+y^2)\right)\right] dA \\
&= \iint_D \left[2\left(\frac{-yx^{-2}}{1+(y/x)^2}\right) - \left(1 - \frac{2y}{x^2+y^2}\right)\right] dA \\
&= \iint_D \left[-\frac{2y}{x^2+y^2} - 1 + \frac{2y}{x^2+y^2}\right] dA \\
&= -\iint_D dA = -(\text{ area of } D) = -16\pi
\end{aligned}$$