4.

$$\oint_2 (x-y)dx + dy = \iint_D 0 - (-1)\, dx\, dy$$

$$= A \iint_D dx\, dy$$

$$= + \iint_D \rho\, d\rho\, d\theta$$

$$= \int_0^\pi d\theta \int_0^R \rho\, d\rho$$

$$= \int_0^\pi + \frac{R^2}{2}\, d\theta$$

$$= \frac{\pi}{2} R^2$$

5. $\dfrac{\partial Z}{\partial x} = 6x^2 - 6$, $\quad \dfrac{\partial Z}{\partial y} = 3y^2 - 12$

$\dfrac{\partial^2 Z}{\partial x^2} = 12x$, $\quad \dfrac{\partial^2 Z}{\partial y^2} = 6y$, $\quad \dfrac{\partial^2 Z}{\partial x \partial y} = 0$

пусть $\dfrac{\partial Z}{\partial x} = 0 \Rightarrow \begin{cases} x_1 = 1 \\ x_2 = -1 \end{cases}$

пусть $\dfrac{\partial Z}{\partial y} = 0 \Rightarrow \begin{cases} y_1 = 2 \\ y_2 = -2 \end{cases}$

$\dfrac{\partial^2 Z}{\partial x^2} \dfrac{\partial^2 Z}{\partial y^2} - \left(\dfrac{\partial^2 Z}{\partial x \partial y}\right) = 72xy$, то $\begin{cases} x=1 \\ y=2 \end{cases} \begin{cases} x=1 \\ y=-2 \end{cases} \begin{cases} x=-1 \\ y=2 \end{cases} \begin{cases} x=-1 \\ y=-2 \end{cases}$

~~все совпадают~~ $\Delta > 0$ только $\begin{cases} x=1 \\ y=2 \end{cases}$ и $\begin{cases} x=-1 \\ y=-2 \end{cases}$ совпадают $\Delta > 0$