924.

$g \in C^2, \; g'(2) = 1$

$$\iint_D (f_{xx} + f_{yy})\,dxdy$$

$$f(x,y) = g(\sqrt{x^2 + y^2})$$

$$D = \{(x,y): x^2 + y^2 \le 4\}$$

$$\frac{\partial f}{\partial x} = g'(r)\frac{\partial r}{\partial x} = g'(r)\frac{x}{r}$$

$$r = \sqrt{x^2 + y^2}$$

$$\frac{\partial^2 f}{\partial x^2} = g''(r)\left(\frac{x}{r}\right)^2 + g'(r)\left(\frac{1}{r} - \frac{x}{r^2}\frac{x}{r}\right)$$

$$\frac{\partial^2 f}{\partial y^2} = g''(r)\left(\frac{y}{r}\right)^2 + g'(r)\left(\frac{1}{r} - \frac{y}{r^2}\frac{y}{r}\right)$$

$$\frac{\partial^2 f}{\partial x^2} + \frac{\partial^2 f}{\partial y^2} = g''(r) + g'(r)\frac{1}{r}$$

$$\iint_D (f_{xx} + f_{yy})\,dxdy = \iint_D \left(g''(r) + g'(r)\frac{1}{r}\right)dxdy$$

$$\begin{cases} x = r\cos\theta \\ y = r\sin\theta \end{cases} \qquad dxdy = r\,dr\,d\theta$$

$$D_{r\theta} = \{(r,\theta) : 0 \le r \le 2,\ 0 \le \theta \le 2\pi\}$$

$$\iint_D (f_{xx} + f_{yy})\,dxdy = \iint_{D_{r\theta}} \left(g''(r) + g'(r)\frac{1}{r}\right)r\,dr\,d\theta$$

$$\iint_D (f_{xx} + f_{yy})\,dxdy = 2\pi \int_{r=0}^{2} (rg'(r) + g(r))\,dr = 2\pi \left[rg(r) \right]_{r=0}^{2}$$

$$\iint_D (f_{xx} + f_{yy})\,dxdy = 2\pi 2g(2) = 4\pi$$