

Έστω $\vec{a} = (xy, xy, 0) \implies \text{curl}(\vec{a}) = \nabla \times \vec{a} = (0, 0, y - x)$. Επίσης $\text{curl}(\vec{a}) \cdot \vec{\eta} = y - x$ και άρα

$$\iint_S \text{curl}(\vec{a}) \cdot \eta \, ds = \iint_D (y - x) \, dA$$

$$\iint_D y - x \, dA = \int_0^1 \int_{\sqrt{3-2x^2}}^{\sin(\frac{\pi x}{2})} y - x \, dy dx = \frac{6\sqrt{3}\pi^2 - 48 - 13\pi^2}{12\pi^2}.$$

