

6.34.

Sätt:

$$\begin{array}{l} x = r \cos \theta \\ y = r \sin \theta \end{array} \quad D_{r\theta} : \quad \begin{array}{l} r : 0 \\ \theta : 0 \quad 2\pi \end{array} \quad dxdy = r dr d\theta$$

$$V = \int_{R^2} x^2 e^{-\sqrt{x^2+y^2}} dxdy = \int_{D_{r\theta}} r^2 \cos^2 \theta e^{-r} r dr d\theta$$

$$V = \int_{r=0}^{\infty} r^3 e^{-r} dr \int_{\theta=0}^{2\pi} \frac{1}{2} (1 + \cos 2\theta) d\theta = 3! \frac{1}{2} 2\pi = 6\pi$$

SVAR:

$$\int_{R^2} x^2 e^{-\sqrt{x^2+y^2}} dxdy = 6\pi$$