$$I = \int_{-\infty}^{+\infty} e^{-x^2}\,dx = ?$$

$$I^2 = I \cdot I = \int_{-\infty}^{+\infty} e^{-x^2}\,dx \cdot \int_{-\infty}^{+\infty} e^{-y^2}\,dy =$$

$$= \iint_{\mathbb{R}^2} e^{-x^2-y^2}\,dx\,dy$$

v polárních souřadnicích

$r \in$

$\varphi \in$

$$\int_{?}^{?} \left( \int_{?}^{?} e^{-r^2} r \, dr \right) d\varphi$$

$$\int_{?}^{?} \left[ -\frac{1}{2} e^{-r^2} \right]_{?}^{?} d\varphi$$

$$\int_{-\infty}^{+\infty} e^{-x^2}\, dx$$

$$\boxed{\frac{1}{\sqrt{2\pi}}\int_{-\infty}^{x} e^{-\frac{t^2}{2}}\, dt}$$

$$\sqrt{2\pi} \stackrel{?}{=} \int_{-\infty}^{+\infty} e^{-\frac{t^2}{2}}\, dt \qquad \frac{t}{\sqrt{2}} = x$$

$$e^{-x^2}$$