

A. Using polar coordinates, evaluate the improper integral

$$\iint_{\mathbb{R}^2} e^{-9(x^2+y^2)} dx dy.$$

B. Use part A to evaluate the improper integral

$$\int_{-\infty}^{\infty} e^{-9x^2} dx.$$

A. Using polar coordinates, evaluate the improper integral

$$\iint_{\mathbb{R}^2} e^{-9(x^2+y^2)} dx dy.$$

$$\pi/9$$

B. Use part A to evaluate the improper integral

$$\int_{-\infty}^{\infty} e^{-9x^2} dx.$$

$$\sqrt{\pi}/3$$