

$$\int \frac{x}{x^2 + 5} dx$$

Solution

Let $u = x^2 + 5$, so $du = 2x dx$. Then

$$\int \frac{x}{x^2 + 5} dx = \frac{1}{2} \int \frac{1}{u} du = \frac{1}{2} \ln |u| + C = \frac{1}{2} \ln |x^2 + 5| + C.$$