

1. $\frac{d}{dx}(\cosh x) = ?$

2. $f(x, y, z) = \cos x e^y z$, find $\frac{\partial f}{\partial x}, \frac{\partial^2 f}{\partial x \partial y}, \frac{\partial^3 f}{\partial x \partial y \partial z}$.

3. $\int_0^{2\pi} \cos 2x \cos x dx = ?$

4. $\int_0^{2\pi} \sin 2x \sin 2x dx = ?$

5. $\int_0^1 \int_0^y 1 dx dy = \int_0^1 \int_?^1 dy dx = ?$

6. If $y = \sqrt{1-x^2}$, find the arc length from (0,1) to (1,0).