

## Homework

1. Discuss the continuity of the function.

$$f(x, y, z) = \frac{\sin z}{e^x + e^y}$$

2. Find the  $f_x, f_y$

$$f(x, y) = \arccos(xy)$$

3. Find the total differential.

$$f(x, y) = e^{-x} \tan y$$

Sol:

- 1.

$$f(x, y, z) = \frac{\sin z}{e^x + e^y}$$

Continue everywhere

- 2.

$$f(x, y) = \arccos(xy)$$

$$f_x = \frac{-y}{\sqrt{1-x^2y^2}}$$

$$f_y = \frac{-x}{\sqrt{1-x^2y^2}}$$

- 3.

$$z = e^{-x} \tan y$$

$$dz = -e^{-x} \tan y \, dx + e^{-x} \sec^2 y \, dy$$