

Calculus on 3D Functions

While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.

1. Find $\frac{\partial}{\partial x} f(x, y)$ for the following:

$$f(x, y) = 2^x y^3$$

$$f(x, y) = \frac{2y}{y + \cos(x)}$$

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

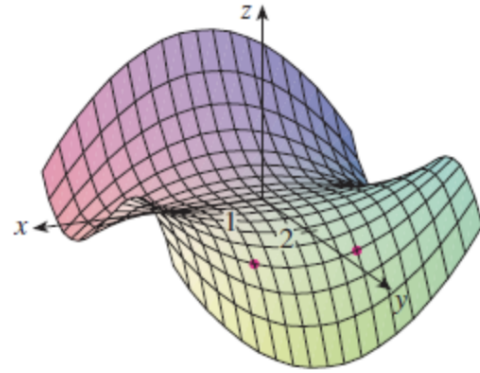
2. Find $\frac{\partial}{\partial x} f(x, y)|_{(0, \ln(2))}$ and $f_y(0, \ln(2))$ where $f(x, y) = xe^{yx^2}$.

3. Graph $f(x, y) = x \sin(xy)$ and “find” where $f_y(1, \ln(2))$ is.

4. Consider the surface graphed below.

(a) Is $f_x(1, 2) > 0$ or $f_x(1, 2) < 0$?
Justify your answer.

(b) Is $D_y(1, 2)$ positive or negative?



5. Let $f(x, y) = 3xy^2 - 2y + 5x^2y^2$.

(a) Find $f_{xy}(-1, 2)$.

(b) Find $f_{yx}(-1, 2)$.