

Name _____

- Write as neatly as you can!
- No calculators are allowed.
- You must show your work to obtain full credit.

1. (5 points) Given the function

$$f(x, y, z) = \frac{x}{3y^2 + yz}$$

compute $f_{yx}(1, 2, 3)$ in whichever order you want.

2. (5 points) Use the **chain rule** to determine $\frac{\partial T}{\partial \theta}$ and $\frac{\partial^2 T}{\partial \theta \partial r}$ when $r = 2$ and $\theta = \pi/3$ given that

$$\begin{aligned} T &= xe^y, \\ x &= r \cos \theta, \text{ and} \\ y &= r \sin \theta. \end{aligned}$$