MIDTERM 2

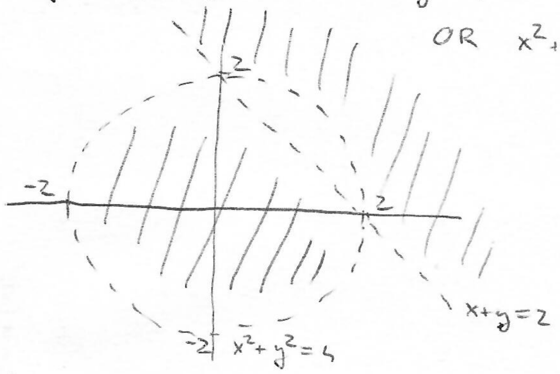
$$f(x,y) = \log \frac{x^2+y^2-4}{x+y-2} + \sin\left(e^{3x+y} \cdot y\right)$$

$$D_f: \quad \frac{x^2+y^2-4}{x+y-2} > 0 \quad \Rightarrow \quad x^2+y^2-4>0 \ \& \ x+y-2>0$$

OR

$$x^2+y^2-4<0 \ \& \ \cancel{x}+y-2<0$$

$$D_f = \{[x,y] \in \mathbb{R}^2 : x^2+y^2-4>0 \ \& \ x+y-2>0 \text{ OR } x^2+y^2-4<0 \ \& \ x+y-2<0\}$$ +1



+4

$$\frac{\partial f}{\partial x} = \frac{x+y-2}{x^2+y^2-4} \cdot \frac{2x(x+y-2)-(x^2+y^2-4)}{(x+y-2)^2} + \cos\left(e^{3x+y} \cdot y\right) \cdot e^{3x+y} \cdot y \cdot 3$$

+4,5

$$\frac{\partial f}{\partial y} = \frac{x+y-2}{x^2+y^2-4} \cdot \frac{2y(x+y-2)-(x^2+y^2-4)}{(x+y-2)^2} + \cos\left(e^{3x+y} \cdot y\right)\left(e^{3x+y} + y \cdot e^{3x+y}\right)$$

$$D_{\frac{\partial f}{\partial x}} = D_{\frac{\partial f}{\partial y}} = D_f$$ +0,5