

1 | 7

$$\begin{aligned}\nabla f &= \begin{bmatrix} \frac{\partial f}{\partial x} \\ \frac{\partial f}{\partial y} \end{bmatrix} \\ &= \begin{bmatrix} \frac{\partial}{\partial x} xy \ln(xy) \\ \frac{\partial}{\partial y} xy \ln(xy) \end{bmatrix} = \begin{bmatrix} x \ln(xy) + y \\ y \ln(xy) + x \end{bmatrix} ???\end{aligned}$$