$x^5 + y^2 + z^2 = 8xyz \quad \Rightarrow \quad \dfrac{\partial}{\partial x}\left(x^5 + y^2 + z^2\right) = \dfrac{\partial}{\partial x}\left(8xyz\right) \quad \Rightarrow \quad 5x^4 + 0 + 2z\dfrac{\partial z}{\partial x} = 8y\left(x\dfrac{\partial z}{\partial x} + z \cdot 1\right)$

$\Leftrightarrow \quad 2z\dfrac{\partial z}{\partial x} - 8xy\dfrac{\partial z}{\partial x} = 8yz - 5x^4 \quad \Leftrightarrow \quad (2z - 8xy)\dfrac{\partial z}{\partial x} = 8yz - 5x^4$, so $\dfrac{\partial z}{\partial x} = \dfrac{8yz - 5x^4}{2z - 8xy}$.

$\dfrac{\partial}{\partial y}\left(x^5 + y^2 + z^2\right) = \dfrac{\partial}{\partial y}\left(8xyz\right) \quad \Rightarrow \quad 0 + 2y + 2z\dfrac{\partial z}{\partial y} = 8x\left(y\dfrac{\partial z}{\partial y} + z \cdot 1\right)$

$\Leftrightarrow \quad 2z\dfrac{\partial z}{\partial y} - 8xy\dfrac{\partial z}{\partial y} = 8xz - 2y \quad \Leftrightarrow \quad (2z - 8xy)\dfrac{\partial z}{\partial y} = 8xz - 2y$, so $\dfrac{\partial z}{\partial y} = \dfrac{8xz - 2y}{2z - 8xy}$.