1. What does our salvaged “MVT-ish” theorem say about our example illustrating that there is no vector valued MVT?

2. Consider the equation $xy + e^{xz} = 1 + z\ln(y)$. Determine which variables are implicitly $C^1$ functions of the other two variables in a neighborhood of $(0, 1, 1)$. For the ones that are, find their partial derivatives with respect to the other two variables near $(0, 1, 1)$.

3. Translate Krantz’s Implicit Function Theorem into ours from class. Read his proof. Read his Inverse Function Theorem. Read his proof of that. Compare and contrast with our approach.

4. Can the system of equations
\[
\begin{align*}
  x^2 + \frac{1}{2}y^2 + z^3 - z^2 - \frac{3}{2} &= 0 \\
  x^3 + y^3 - 3y + z + 3 &= 0
\end{align*}
\]
be solved for $y$ and $z$ in terms of $x$ near $(-1, 1, 0)$?