Assignment 2 / Due Wednesday July 4

PROBLEM 1 Find the extreme values of $f(x, y, z) = x + y^2 z$, subject to the constraints $y^2 + z^2 = 2$ and $z = 2$.

PROBLEM 2 Show that the following equations can be solved for u and v as functions of x, y and z, near the point P_0, where $(x, y, z) = (2, 0, 1)$ and $(u, v) = (1, 0)$. Find $\frac{\partial u}{\partial z}$ at this point.

$$\begin{cases} xe^y + uz - \cos v = 2 \\ u\cos v + x^2 v - yz^2 = 1 \end{cases}$$

PROBLEM 3 Find the maximum and minimum values for the curvature of the ellipse $x = a\cos t$, $y = b\sin t$, where $a > b > 0$.