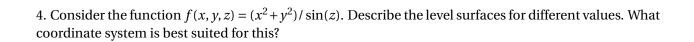
18.022 Recitation Handout 24 September 2014

1. Let $A = \begin{pmatrix} 2 & 6 \\ 0 & 2 \end{pmatrix}$, and let U be the unit square $\{(x, y) : 0 \le x \le 1 \text{ and } 0 \le y \le 1\}$ in \mathbb{R}^2 . Let U' be the image under A of U. Find the area of U.

2. Find the distance from the line (4+t, -1-2t, 3-7t) to the plane 3x-2y+z=3.

3. Let $A = \begin{pmatrix} 2 & -3 \\ 1 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} 1 & -2 \\ 5 & 0 \end{pmatrix}$. Find AB - BA.



5. We say that a function $f: \mathbb{R}^m \to \mathbb{R}^n$ is linear if $f(\lambda x + \mu y) = \lambda f(x) + \mu f(y)$. Characterize all linear functions from \mathbb{R} to \mathbb{R} . Is f(x) = 7x - 4 linear, according to this definition?