Mathematics 1350H – Linear algebra I: Matrix algebra

Trent University, Summer 2013

Assignment #2

Due on Wednesday, 29 May, 2013.

Planes on a gem?

Consider the planes in $\mathbb{R}^3$ given by the equations $x + y - z = 2$, $x - y - z = 2$, $-x + y - z = 2$, $-x - y - z = 2$, $x + y + z = 2$, $x - y + z = 2$, $-x + y + z = 2$, $-x - y + z = 2$, $z = -1$, and $z = 1$.

1. Find all the points where three or more of these planes intersect. *[8]*

2. Sketch the convex solid containing the origin each of whose faces is a piece of one these planes. *[2]*