# Computer Assignment 3: MATH 341, Spring 2014

Due Friday, May 9

Find the equation $z = ax + by + c$ of a plane that best approximates the following $(x, y, z)$ triples in the least squares sense:

$$(1,1,22), (1,2,12), (1,3,6), (2,1,25), (2,2,17), (2,3,10), (3,1,29), (3,2,14), (3,3,9).$$

To be precise, find the plane that minimizes the mean-square error in $z$. Graph the 9 data points (one way to do this is by typing `plot3(x, y, z, 'k*')` where `x`, `y`, `z` are 9-by-1 vectors containing the $x$, $y$, and $z$ coordinates of the points), and then graph the plane you found (I suggest using `ezmesh` for this) on the same graph. Does the plane pass reasonably close to the points, passing above some and below others? To see this it may be necessary to rotate the 3D graph; you can do this by clicking on the circular arrow button in the MATLAB figure window and then clicking and dragging the graph.

Now, try expressing $x$ in terms of $y$ and $z$ and do a least squares fit minimizing the mean-square error in $x$. How close is the plane you get to the previous plane? What accounts for the difference?