Worksheet 6 - Due 11/10

1. You should be familiar with the theorem here: `http://kevinlui.org/au17m308/log/4-review.html`
   (a) There is a somewhat obvious error. Find it.

   Solution: It turns out there are (at least?) 2 errors.

   - "Let $A = [a_1, \ldots, a_m]$ be a matrix..." The matrix A is of the wrong dimension.
   - "number of rows of all zeros in B." This is the nullity of A instead of the null space.

   (b) Write down all the different ways to express the nullity.

   Solution: Here we use the same set up as in here: http://kevinlui.org/au17m308/log/4-review.html

   - $nullity(A)$
   - $dim(null(A))$
   - $nullity(B)$
   - $dim(null(B))$
   - $dim(ker(T))$
   - number of free variables in B
   - $m - rank(A)$
   - number of vectors required to span the solution space of $Ax = 0$.

2. What is the absolute value of the determinant of the matrix in problem 2 of worksheet 5?

   Solution: The matrix in question defines a reflection across some plane. This preserves volume so the absolute value of the determinant should be 1.