CALCULUS 1260
TAKE HOME TEST 2 due Friday 9/9/2016

Your Name (PRINT IN BLOCK LETTERS):

INSTRUCTIONS

Work all problems. SHOW YOUR WORK. Circle your answers. Each problem is worth 10 points max.
YOU CAN GET HELP ON CONCEPTS INVOLVED BUT NOT ON THE PROBLEMS THEMSELVES.

1. Let \( \mathbf{a} = < a_1, a_2, a_3 > \) and \( \mathbf{b} = < b_1, b_2, b_3 > \) be two vectors. Show, by direct computation, that

\[
||\mathbf{a} \times \mathbf{b}||^2 = ||\mathbf{a}||^2 ||\mathbf{b}||^2 - (\mathbf{a} \cdot \mathbf{b})^2
\]
2. Find the distance between the (parallel) planes \( x + y + 2z = 3 \) and 
\( 2x + 2y + 4z = 8 \)
3. Find the distance between lines $x = t - 1, y = t + 2, z = t - 2$ and $x = s, y = 2s, z = 3s$. 
4. Find the distance from the point \((0, 0, 0)\) to the line \(x = t, y = t + 1\) and \(z = t + 2\).