

**MATH 231: Calculus of Several Variables**  
**Section 1, 107 Ag Sc & Ind Bldg,**  
**TR 9:05 AM - 9:55 AM**

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*I **\*\*highly\*\*** recommend you draw pictures for each problem. Remember*

- *the vector that defines the orientation of a line moves in the direction of that line*
  - *the vector that defines the orientation of the plane is perpendicular to that plane*
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**Homework 6:** Due Thursday, Sept 19

1. Read the notes titled “Lines and Planes”
2. Consider the line through the points  $(0, 0, 0)$  and  $(4, 3, -1)$ .
  - (a) Write the parametric equation that represents the line.
  - (b) Write the symmetric equation that represents the line.
  - (c) Write the line’s vector equation.
3. Find the line through the point  $(2, 1, 0)$  that is perpendicular to both  $\vec{i} + \vec{j}$  and  $\vec{j} + \vec{k}$ .
  - (a) Write the parametric equation that represents the line.
  - (b) Write the symmetric equation that represents the line.
  - (c) Write the line’s vector equation.
4. Write the equation for the plane containing the points  $(0, 1, 1)$ ,  $(1, 0, 1)$ , and  $(1, 1, 0)$ .
5. Write the equation for the plane through the point  $(1, 1, 1)$  that is parallel to the plane  $x + y + z = -2$