

# Reading Assignment # 15

Math 9 - Prof. Orellana

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Read Section 13.5 and then answer the following questions.

1. What is the goal of section 13.5?
2. What characterizes a line?
3. Derive the vector form of a line from a given parallel vector  $\mathbf{v}$  and a point  $P_0(x_0, y_0, z_0)$  on the line?
4. How do we obtain the parametric equation of a line?
5. Derive the symmetric equations for a line.
6. Give as many details to describe the line with symmetric equations,

$$\frac{x - x_0}{a} = \frac{y - y_0}{b} \quad z = z_0$$

7. What does it mean for two lines to be “skew”?
8. How can we describe a line segment?
9. What determines a plane?
10. Explain Figure 6.
11. Derive the scalar equation of a plane with normal  $\mathbf{n} = \langle a, b, c \rangle$  and through the point  $(x_0, y_0, z_0)$ .
12. Describe how you would compute the equation of a plane that contains three points P, Q and R.
13. How would you check if two planes are parallel? perpendicular?
14. What does the note in the section say?