Supplementary Exercises for Section 11.5

1. What is the unit normal vector to each of the coordinate planes? Why does this make sense?

2. Show that $\langle 2, 1, 3 \rangle + t\langle 1, 1, 2 \rangle$ and $\langle 3, 2, 5 \rangle + s\langle 2, 2, 4 \rangle$ are the same line by relating s and t.

3. Give a prose description for each of the following processes:

   (a) Given two distinct points, find the line that goes through them.
   (b) Given three points (not all on the same line), find the plane that goes through them.
   (c) Given a line and a point not on the line, find the plane that contains them both.
   (d) Given a plane and a point not on the plane, find the line that is perpendicular to the plane through the given point.

4. Why do we need the caveat that not all points be on the same line in problem 3(b)?

5. How might we find the angle between two planes? Find the angle between x+y+z=2 and x+2y+3z=8.