Math 53 Discussion Problems Sept 17

1. Given $\mathbf{a} = \mathbf{i} + 2\mathbf{j}, \mathbf{b} = \mathbf{j} - 3\mathbf{k}$, calculate
   (a) $a \cdot b$.
   (b) $a \times b$.
   (c) The angle between a and b.
2. Find parametric equations for the lines described.
   (a) The line through $(1, , 2, -1)$ and $(-1, 0, 1)$.
   (b) The line through $(0, 7, 0)$ perpendicular to the plane $x+y+2z = 3$.
3. Find equations for the planes described.
   (a) The plane through $A(1, -2, 1)$ perpendicular to the vector from the origin to A.
   (b) The plane spanned by intersecting lines $x = 2t+1, y = 3t+2, z = 4t+3$ and $x = s+2, y = 2s+4, z = -4s-1$.
4. Find the angle between planes $5x + y - z = 10$ and $x - 2y + 3z = -1$.
5. Find the point in which the line $x = 2, y = 3 + 2t, z = -2 - 2t$ meets the plane $6x + 3y - 4z = -12$.
6. Find a parametric equation for the line in which the planes $3x - 6y - 2z = 3$ and $2x + y - 2z = 2$ intersect.