- When reviewing the test it's always good to look over your notes and especially old quizzes.

- Some nice summary review problems can be found on pages 697-700. I would suggest...
  2-4,6,9,10,12,18,19,24,26,27,31,32,36,41,44,49,59, 60,67-71,75,76,78,82
  Of course not everything is well represented by this list (and some things are WAY over represented
  – the test isn't mostly about planes and lines). In particular, make sure you look over the other
  Chapter 12 suggested homework problems. One special note: I don't think the review problems
  cover polar coordinates at all...but you need to review that too!

- The 1$^{\text{st}}$ Official Brian Gibson Study Group:

  > Hello Dr. Cook,
  > Could you please send out a notice to the class that we will be meeting in the library
  > lobby at 12:00 pm on Sunday to study for the Mon. exam? For all late comers, I
  > will be procuring a room (hopefully on the third floor), where they should find us.
  > Thanks.
  > Brian Gibson

Stuff to know...

- find distances in $\mathbb{R}^2$ and $\mathbb{R}^3$.

- find the equation of a sphere and circle given radius and center.

- what is a "right handed coordinate system"?

- how to parameterize a circle, line, graph of $y = f(x)$, graph of $x = g(y)$, and ellipse.

- how to convert between polar and rectangular coordinates.

- how to transform a polar equation to a rectangular equation and vice-versa.

- how to add and scale vectors and interpret what this means geometrically.

- normalize a vector to get a unit vector (what do these words mean?).

- compute the magnitude (i.e. length) of a vector.

- how to differentiate and integrate vector valued functions.

- how to compute arc length.

- how to find velocity and acceleration functions given a position function.

- how to find position and velocity functions given an acceleration function or given the object is
  in "free fall".

- find the dot product.

- how to compute work ($W = \mathbf{F} \cdot \mathbf{d}$).

- $\mathbf{u} \cdot \mathbf{v} = |\mathbf{u}|\,|\mathbf{v}|\,\cos(\theta)$

- how to find the angle between two vectors.

- what does a positive, negative, zero dot product mean?

- how to find the projection of one vector onto another.

- find the cross product.

- given a picture of 2 vectors, sketch the cross product – which way does it point? RIGHT HAND RULE. Why am I yelling?

- $|\mathbf{u} \times \mathbf{v}| = |\mathbf{u}|\,|\mathbf{v}|\,\sin(\theta) = $ area of the parallelogram spanned by $\mathbf{u}$ and $\mathbf{v}$

- the area is zero if and only if the vectors are **parallel**.

- how to find the volume of a parallelepiped spanned by 3 vectors.

- the volume of this is zero if and only if the vectors are **coplanar**.

- how to find the equation of a line given 2 points and a plane given 3 points.

- how to find symmetric scalar equations from a vector equation of a line.

- how to parameterize a plane (find two vectors parallel to the plane along with a point and...).

- determine if two lines are equal, parallel, intersecting, or skew (if intersecting, at what point?).

- determine if two planes are equal, parallel, or intersecting (if intersecting, what is their line of intersection?).

- the angle between two planes is equal to the angle between the two planes' normal vectors. So if the dot product of the two normals is zero, then the planes are orthogonal (that is perpendicular).

I hope this helps! See you Monday.