Week 17 Pre-Calc Assignment:

Day 1: pp. 436-437 #1-35 odd
Day 2: pp. 436-437 #37-61 odd
Day 3: pp. 447-448 #1-35 odd
Day 4: pp. 461-464 #1, 3, 13, 17, 21, 25, 31, 39, 43, 45, 49, 55, 57, 65-71 odd, 75

Notes on Assignment:

Pages 436-437:

#1-11: Use the definition box on page 428.

#13-17: You have mathgraphs on your cd if you want to use them.

#27-35: Multiply the vector times ($\frac{1}{magnitude}$). That is, take $\frac{1}{\|\boldsymbol{v}\|}\boldsymbol{v}$ or $\frac{\boldsymbol{v}}{\|\boldsymbol{v}\|}$.

#37-39: If u was a unit vector, then we would just multiply by the magnitude of v to get the correct length in the direction of u. So, for these problems, find a unit vector in the direction of u by finding $\frac{\boldsymbol{u}}{\|\boldsymbol{u}\|}$ and then multiply by $\|\boldsymbol{v}\|$.

#41-45: You do not need to sketch these.

#47: Compare to $\boldsymbol{v} = \|\boldsymbol{v}\|(\cos\theta\,\boldsymbol{i} + \sin\theta\boldsymbol{j})$.

#49: Use $\tan\theta = \frac{b}{a}$ for $\boldsymbol{v} = a\boldsymbol{i} + b\boldsymbol{j}$.

#51-55: Use $\boldsymbol{v} = \|\boldsymbol{v}\|\langle\cos\theta\,, \sin\theta\rangle$

#57: First find the directional angle of $\boldsymbol{i} + 3\boldsymbol{j}$. We know for $a\boldsymbol{i} + b\boldsymbol{j}$ that tan θ = b/a, so for $\boldsymbol{i} + 3\boldsymbol{j}$ we have tan θ = 3/1. Draw a triangle letting opp = 3 and adj = 1. Find the hypotenuse and then use SOHCAHTOA to find sin θ and cos θ so that you can figure out what $\|\boldsymbol{v}\|\langle\cos\theta\,, \sin\theta\rangle$ is.

Pages 447-448:

#9-13: Remember that $\boldsymbol{v}\cdot\boldsymbol{v} = \|\boldsymbol{v}\|^2$.

#15-23: Use the formulas in the definition box on page 441. Remember that to find the angle you will need to use arccos.

#25: Make a vector out of each side using the vertices given. Find 2 of the angles as you did in #15-23. For the 3rd angle, subtract the other 2 angles from 180°.

#29: Use the alternative form of the dot product formula given on the middle of page 442.

#31-35: The dot product must equal 0 for the vectors to be orthogonal.

Pages 461-464:

#17: Draw the picture. You will have 2 triangles. The 31° angle is part of a right triangle. If you know the hypotenuse, you can use sin 31° = (building height)/(hypotenuse) as your equation. You will have to use the triangle with the 17° angle to find the side that is the hypotenuse of that other triangle.

#19: Find all of the angles of the triangles using what is given. Then use the Law of Sines on the triangle that includes the tree.

#53: Use $\tan\theta = \frac{b}{a}$ for $\boldsymbol{v} = a\boldsymbol{i} + b\boldsymbol{j}$ to find θ.