Week 13 Pre-Calc Assignment:

Day 1: pp. 328-331 #1-47 odd
Day 2: pp. 328-331 #49-67 odd, 75, 77, 83, 91, 93, 97
Day 3: pp. 338-341 #1-21 odd
Day 4: pp. 338-341 #29, 31, 39, 41, 47-57 odd
Day 5: pp. 344-346 #5-19 odd, 31-51 odd, 55, 63-89 odd, 93-99 odd, 109-127 odd

Notes on Assignment:

Pages 328-331:

#1-15: Use your unit circle.

#33: These are all values of the tangent function

#35: Use [ZOOM] [ZTrig] for the window.

#37-41: Set up the trig relationship and then solve for x. You will have to take the inverse function of both sides to undo the trig function.

#43-47: If the angle is not in the range of the inverse function, find a coterminal angle or a matching reference angle that is in the range.

#49-57: Make a triangle from the inverse function. For example, on #49, arctan ¾ is the angle that has tangent = ¾. Make a triangle with opp = 3 and adj = 4. Find the hypotenuse using Pythagorean theorem and then you can find the sine. Remember to use your knowledge of allsintancos and your restrictions for the range of the inverse functions to know the quadrant that the angle is in to get the correct sign on your answer.

#59-67: Do these with right triangles like #49-57. They will all be quadrant 1 angles.

#75: This is a vertical stretch of f(x) = arcos x. So instead of the graph going from 0 to π, it will be stretched from 0 to 2π.

#77: This is a shift of y = arcsin x 1 unit to the right.

#83: Use [2^{nd}] [cos]

#91a): Use tan = opp/adj to get the equation. Then take the arctan of both sides to solve for θ.

#91b): Use the equation from part a) and put in the given values of s.

#93a): Use the equation into [y=], letting y represent β.

#93b): Either use [TRACE] or [CALC] [maximum] to find the highest point on the graph. This is where β is at its maximum.

#93c): What happens as the camera gets further away from the picture?

#97: Use tangent and then take arctan of both sides to solve for θ.

Pages 338-341:

#11-13: If you draw the altitude, it splits the base, b, in half. Solve for h (the altitude) by using one of the right triangles formed with the altitude.

#19: Let x = the height of the church and y = the height of the church and steeple together. Use 2 different equations to solve for x and y. Then the height of the steeple is y-x.

#29: The bearing is N 52° E.

#31: Split the 30 km into x and 30-x, letting x be the base of the 14° triangle and 30-x be the base of the 34° trangle. Now tan 14° = d/x, so x = d/tan 14° by solving for x. We can move the tan 14° to the top of the fraction if we change it to cot 14° (since tangent and cotangent are reciprocals). We don't have to do this, but it will make the algebra a little easier. Now tan 34° = d/30-x. We substitute for x from our first equation to get tan 34° = d/30-dcot14°. Carefully solve this for d. The solutions manual changes tan 34° to cot 34° so that it can flip the right side of the equation. I think that may be a little confusing, so go ahead and solve it as it is. When you get it solved for d, you need to enter it in your calculator. Make sure your calculator is in DEGREE mode. Also, remember that cot 14° is [TAN] (14) [x^{-1}] [ENTER]. Make sure to close the ( ) around the 14.

#39: Use the Pythagorean Theorem to find the diagonal of the base of the cube, which is the bottom leg of your triangle. Then use tan = opp/adj to get your equation and then take arctan of both sides to solve.

#41: Draw the pentagon inscribed in the circle. Use 2 radii to draw a triangle. It will be isosceles because the radii = 25. Figure out the central angle (Hint: 360° in a circle). Then draw in an altitude of the triangle, similar to problems #11-13.

#47-49: Refer to Example 7 on p. 337.

#51: Use d = a sin ωt, since d=0 when t=0. (This is like starting at the origin, which is what the first cycle of sine does.

#53: Use $d = a \cos \omega t$, since $d \neq 0$ when $t=0$. (This is like the first cycle of the cosine curve, which starts at a point above the x-axis.)

#57: The amplitude is the maximum displacement. The reason that it is a ¼ in the equation instead of 3 is because the 3 is in inches and the equation is in feet. 3 inches = ¼ foot.

#57a): Graph this on your calculator. Use [ZOOM] [ZTrig] and then after it has graphed, zoom in once to get a better picture.

#57b): Remember that the period = $2\pi/\omega$.

#57c): Solve $0 = \frac{1}{4} \cos 16t$. Multiply both sides by 4 to get $0 = \cos 16t$. Where does the cosine = 0? Whatever that angle is, 16t must equal it. Set them equal and solve for t.

Pages 344-346:

#39-41: Use the Pythagorean Theorem to find the hypotenuse first.

#43-45: Use the Identities on page 283

#55: Draw the triangle first.

#63-67: Use the Identities on page 283 or make a right triangle and use SOHCAHTOA. Make sure that you take your constraints into account and use allsintancos to determine what quadrant your angle is in so that you get your signs correct.

#125-7: Make a right triangle for the angle first.