MATH 1523

The Top 40 Things to Know for Exam #2

(Disclaimer: this is not necessarily a complete list, but is a good place to start!)

1. Familiarity with all of the basic angles on the unit circle, and the trigonometric functions of these angles

2. Solving right triangles using the right triangle definitions of the trigonometric functions and the Pythagorean Theorem

3. The general form of simple harmonic motion and its key terms (period, frequency, amplitude)

4. When to use a sine model or a cosine model in simple harmonic motion

5. Bearing and how to use it to solve word problems

6. Memorize the Pythagorean Identities

7. Memorize the Reciprocal Identities

8. Memorize the Quotient Identities

9. Verifying trigonometric identities using points 5-7 above (be familiar with the methods we used in class)

10. Using the sum and difference formulas for given angles (pg. 43 A, B) and for unspecified angles (pg. 43 C)

11. Know how to "break down" larger angles into smaller, more familiar ones (pg. 43)

12. Using the sum and difference formulas to verify identities (pg. 43 D, E)

13. Know how to reduce the powers of a trigonometric expression (pg. 45 C)

14. Using the double angle and half angle formulas for given angles (pgs. 45-46 A,D) and for unspecified angles (pg. 43 B,E)

15. Know whether to use + or – in the half formulas (remember that θ is generally not in the same quadrant as θ/2; use the "divide by 2" trick from class)

16. Using the sum and difference formulas to verify identities (pg. 46 F)

17. Converting sum to products and products to sums

18. Know which trigonometric functions are even and odd (and be able to use this property to simplify any negative angles in converting sums to products and products to sums)

19. Verifying trigonometric identities using sum to product and product to sum formulas

20. Periods of all the trigonometric functions

21. Solving basic trigonometric equations (and account for the period of the given function)

22. Know how to solve quadratic trigonometric equations and those that require factoring

23. Know the domain and range of all trigonometric functions (but most notably tangent, in case you need to rule out any solutions; see pg. 49 C)

24. Solving "multiple angle" trigonometric equations (see pg. 50 F)

25. When and how to use the Law of Sines (which cases)

26. What to do when faced with SSA, the ambiguous case

27. When and how to use the Law of Cosines (which cases)

28. Using Law of Sines and Law of Cosines to solve word problems

29. How to check to see if your triangles answers make sense (largest side across from largest angle, etc)

30. Heron's Formula for the Area of a Triangle

31. Basics of polar coordinates

32. How to convert between polar and rectangular coordinates

33. How to convert between polar and rectangular equations (remember the "multiply through by r trick" for cases like pg. 57 E)

34. The Non-Uniqueness of polar coordinates, and how to find and recognize ordered pairs that produce the same point

35. Graphing polar equations by hand and with the graphing calculator

36. Familiarity with the terms: pole, polar axis

37. How to determine the three kinds of polar symmetry by hand and with the graphing calculator

38. Basic geometric properties to solve word problems (for example: largest side of a triangle is across from the largest angle, alternate interior angles and parallel lines, parallelogram properties, sum of angles in a triangle)

39. Remember that you will be given all formulas except for the Pythagorean Identities, the Quotient Identities, and the Reciprocal Identities. However, they will not be labeled on the exam sheet, so you will still have to be familiar with them!

40. You have lots of resources to study for this exam: office hours, two exam reviews, practice exams, MyMathLab. Information about all of these is posted on the course website, http://math.ou.edu/~jcook/. Please take advantage of them!