

Last update: Thu Nov 2 18:38:00 MST 2006 [/m147.fa06/handouts147/t3\\_147\\_B03/review\\_suggestions\\_3.tex](/m147.fa06/handouts147/t3_147_B03/review_suggestions_3.tex)

1 This list is now in final form.

2 Test #3 is

Friday  
11/3/06.

We've agreed to start the test at 0715, a whole 25 minutes early.

3 The test will cover the material of Assignments #36 – #45. roughly, that is, some of section 3.4, some of section 8.3, sections 5.3-5.4. sections 6.1-6.4 and 7.1-7.3.

Be sure you are with it about:

- (a) Where the functions **sin**, **cos**, **tan**, **sec**, **csc**, and **cot** come from unit-circle-wise.
- (b) The clock-face famous values.
- (c) The unit-circle setup
  - (i) Terminal-ray slope
  - (ii) Terminal-point **x**-coordinate
  - (iii) Terminal-point **y**-coordinate
  - (iv) Compensations for non-unit circles
- (d) Justifications for the following that make use of circle setups, some unit, some non-unit:
  - (i) Justify the Law of Cosines by reference to a non-unit circle.
  - (ii) Justify the Law of Sines by reference to a non-unit circle.
  - (iii) Justifying the formula for **cos(s + t)** by reference to a unit circle.
- (e)  $x^2 \left| \begin{array}{c} \cos(2\alpha) \\ \sin(2\alpha) \end{array} \right. = -\frac{527}{625}$ , where **cos(α) = 3/5** (not a calculator problem).
- (f) Through how many degrees did the six-foot-diameter SUV tire turn in rolling one mile? Was it  $\approx 100,840.6^\circ$ ? How far did the SUV move if its wheel turned through  $10^\circ$ ? About six inches?
- (g) In 6.1: 60a, enhance the picture by connecting the two outer ends of the radii with a line. The triangle thus formed has approximate area **46.4**. in 6.1: 60b, it's **36**.
- (h) Law of Sines sometimes begets more than one triangle. Sometimes less.

- (i) Law of Cosines gets at most one triangle.
  - (j) Complex-number solutions of some quadratics
  - (k) Complex arithmetic: add, multiply, divide in standard form, modulus, argument. Argand diagram.
  - (l) Polar form of a complex number and  $e^{i\theta}$
  - (m) Graph a cycle. Ungraph a cycle.
- 4 Comments on problems in the MATH-147 Test #1 for 6/22/01 (in the Old-Test collection).
- (a) Problem 1 – with-calculator right-triangle solution.
  - (b) Problem 3 – interpretation of  $\tan(\theta)$  as a slope.
  - (c) Problem 4 – solution of a triangle which cannot be assumed to be a right triangle.
  - (d) Problem 6 – Clock
  - (e) Problem 7
  - (f) Problem 8
  - (g) Problem 9 – exercise with the Pythagorean Identities and the unit circle.
- 5 Comments on problems in the MATH-147 Test #2 for 7/6/01 (in the Old-Test collection).
- (a) Problems 1 and 2 – Clock
- 6 Comments on problems in the no-calculator MATH-147 Test #3 for 7/20/01 (in the Old-Test collection).
- (a) Problems 1 and 2 – clock
  - (b) Problem 3 – polar form of a complex number – really just another clock problem.
  - (c) Problem 5 – trigonometric algebra.
  - (d) Problem 6 – trigonometric identity to prove.
  - (e) Problem 7 – a familiar type extended by section 7.3 ideas.
  - (f) Problem 8 – graphing a  $y = A \cos(mx + b)$
  - (g) Problem 10 – it should say that the answer is not just a verbatim copy of the left-hand side.

(h) Problem 11 – derive one of the addition formulas from unit-circle properties.

**7** Comments on problems in the MATH-147 Test #4 for 8/3/01 (in the Old-Test collection).

(a) Problem 1 – Clock!

(b) Problem 3 – Clock Plus 7.3

(c) Problems 5 and 6 – identity proofs