

Last update: Mon Feb 18 17:21:42 MST 2008

/m143.sp08/handouts143/t1\_143\_220/REVSTUFF/review\_suggestions\_1.tex

1 This list is not in final form. Like, stuff may yet be added to it.

2 Test #1 is

Wednesday  
2/20/08.

3 The test will cover the material of Assignments #1 – #7, along with some **circle** questions from section 1.8 (Assignment #8). **There will be no section-2.1 questions.**

You'll need to have a working graphing calculator (see note 7 below).

#### 4 Topic List

Interval notation

Absolute value

Laws of exponents ( $a^m a^n \neq (a^m)^n$ )

Negative exponents in numerators

Negative exponents in denominators

Simple  $1/n$  exponents ( $x^{1/n} = \sqrt[n]{x}$ )

Two ways to decode  $x^{p/q}$

Not doing  $\sqrt{A - B} = \sqrt{A} - \sqrt{B}$

Not doing  $(x + y)^n = x^n + y^n$

Subtracting polynomials and distributing minus signs through expressions

Multiplying three- and four-term expressions

$(a \pm b)^2 =$  at the drop of a hat

$(a + b)(a - b) =$

$A^2 - B^2 =$  faster than lightning

$A^2 \pm 2AB + B^2 =$

Factoring out the coldest power of a common factor

Reducing fractions to lowest terms

Multiplying fractions

Dividing fractions

**LEAST** Common Denominator

Adding and subtracting fractions

Solving quadratic equations by factoring

Solving quadratic equations by completing the square

Deriving the **Quadratic Formula**

Solving quadratic equations by the quadratic formula

Rejecting spurious solutions of equations

Solving equations involving rational fractions

Solving equations involving radicals

Not doing  $(\sqrt{3x+1} + x)^2 = 3x+1 + x^2$

Pythagoras's Theorem

Similar-Triangles Theorem

Area of a rectangle

Area of a triangle

Find equations governing dimensions of a polygon

Recognizing and drawing clear similar-triangle pairs

Making sign charts for factored expressions

Interpreting sign charts to solve non-linear inequalities

Solving absolute-value inequalities

From a picture of a circle, derive its equation

Recognizing a circle equation (with Pythagoras hiding inside)

From a circle equation, draw its graph

Recognizing a straight-line equation

Getting the line equation from its picture

Perpendicular lines

Parallel lines

Slope

## 5 Suggested Problems

Laws of Exponents: Page 131: Exercises 11, 17, 19-28

Distributing minus signs, a corporate Achilles Heel: 1.3: 11, 13. Page 131: 49, 51,

**LEAST** Common Denominator: 1.4: 37, 41, 43, 45, 45, 47, 49. Page 132: 59.

Calculus Factoring: Page 131: 43, 47; 1.3: 97-104; 1.4: 67-72

Triangles and other geometry: 1.6: 33-43 odds and 47, 49. Also the #9 extra-credit problems.

Circles: equations from pix: 1.8: 81-87 odds

Circles: pix from equations: 1.8: 89-93 odds and 97

Equations involving rational expressions: 1.5: 75-79. 132: 77

Equations involving radicals: 1.5: 81, 83 Non-linear inequalities: 1.7: 45-61 odds. 2.1: 41-57 odds

- 6 On page 135 is a purple-page “test” which has a full answer key in the back of the book. All of the purple-page problems are fair game, *except* 3, 9, 14, 16, 21, 22.

**The notes below are from previous semesters.**

- 7 Make sure you bring along your calculator with batteries that won’t quit on you.

The calculator part of the test will be brief – 15 minutes, I hope. As well as numerical computations as in Assignment #3, it will likely involve simple graphing such as was needed in Assignment #8.

On calculator problems especially, you must show enough steps that I can replicate your solution. This also increases the likelihood of partial credit in the event of errors.

The calculator part of the test will be handed out first (on colored paper).

When you are finished with it, put your calculator away and raise your hand. I will rush over to you and swap for the main, non-calculator, portion of the test.

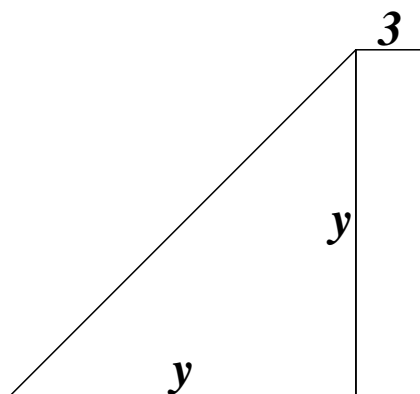
Here are some problems such as you might encounter on the calculator portion of the test.

- (a) A nice, straight, 94-foot tree casts a 217-foot shadow. What is the straight-line distance from the top of the tree to the tip of its shadow. Round your answer to two decimal places.
- (b) Near the part-(a) tree stands a 78-foot tree. How long is its shadow?
- (c) A rectangle of area  $5280 \text{ ft}^2$  is 3.7 times as long as it is wide. Find its length and width.
- (d) A rectangle of area  $5280 \text{ ft}^2$  is 90 feet longer than it is wide. Find its length and width.
- (e) Your answer to the following is a labeled diagram of what the calculator’s screen showed and enough steps that your solution can be replicated.

Make a calculator graph of the curves  $y = \sqrt[3]{x}$  and  $y = x^2 - 1$ . Find three-decimal approximations to the  $x$ - and  $y$ -coordinates of the crossings of these curves.

- 8 Here is an algebra problem such as might appear on the non-calculator portion of the test. Use an algebra approach – all the correct answers involve radicals.

The total area enclosed within this figure is  $48 \text{ in}^2$  :



- (a) Set up an equation and solve it to determine the value of  $y$ , the length of a short side of the triangular part of the figure. Use this value to answer the rest of the questions.
- (b) Find the length of the triangle's hypotenuse.
- (c) Find the area of the triangular part.
- (d) Find the length of the outer perimeter of figure.
- 9 Click here for a review-problem set for a MATH-143 Test #1 from February, 2006. Note that it has an answer key.
- 10 Comments on problems in the MATH-143 Test #1 for 9/21/05.
- (a) Calculator problem 1 concerns triangle computations.
- (b) Problem 3 - laws of exponents, our corporate Achilles heel.
- (c) Problem 4 - check answers back in the original equation.
- (d) Problem 5 - parentheses and **LEAST** Common Denominators.
- (e) Problem 6 - complex fractions, common denominators, and laws of exponents.
- (f) Problem 7 - calculus-style factoring and **COLDEST POWER**.
- (g) Problem 8 - Pythagoras and similar triangles. Here you need to make it very clear which similar-triangle pair you're using.
- (h) Problem 9 - check answers back in the original equation.
- (i) Problem 10 - sign-change-chart gig. Section 1.7, like. Your instructor is just fascinated with problems like this.
- (j) Problem 11 - write down a derivation for the **Quadratic Formula**.
- 11 The MATH-143 Test #1 for 9/27/02 has problems 1 and 2 relevant to us at our current stage.