Last update: Sun Nov 25 15:28:17 MST 2007

/m143.fa07/handouts143/t3_143_B28/REVSTUFF/review_suggestions_3_tex

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

2 Test #3 is

Wednesday
11/28/07.

3 The test will cover the material of Assignments #20 – #27, roughly, that is, sections 3.1-3.6 and 4.1.

4 Bring along your calculator for some 4.1: 77-like problems as well as some exponential graphs.

5 Be sure you know about

(i) the graph-equation pairings set up on page 166 of our text

(ii) the section-2.4 moves

(iii) fast graphing of 2.4 transformations of page-166 functions.

(iv) when the graph of function $\boldsymbol{g}$ arises from some section-2.4 transformations of the graph of $\boldsymbol{f}$, how does the formula for $\boldsymbol{g}$ relate to the formula for $\boldsymbol{f}$?

(v) Computing the exponential function whose graph passes through two points (see Assignment #27 and its answer key):

(a)

t	$f(t)$
0	8
5	3

yields $f(t) = 8 \cdot \left(\frac{3}{8}\right)^{t/5}$

(b)

x	$g(x)$
5	12
14	39

yields $g(x) = 12 \cdot \left(\frac{13}{4}\right)^{(x-5)/9}$

(vi) How compound interest works (4.1: 77).

(vii) The section-3.1 graphs of factored polynomials rely on the section-1.7 methods for solving non-linear inequalities.

(viii) Polynomial long division and *interpretation* of the results: the two associated equations at the bottom of page 266. The interpretation out in the page-266 left margin is a big deal in the section-3.6 graphs of rational functions.

(ix) Glib facility with *synthetic division* both to find quotients and remainders AND also to evaluate polynomials at particular values.

(x) The rational-candidate list of rational numbers which are possibly zeros of a polynomial with rational coefficients. This insight tells you instantaneously, for instance, that $\mathbf{2/3}$ and $\mathbf{7}$ cannot be zeros of the polynomial in problem 73(d).

(xi) Detecting upper bounds on positive real roots (BLUE 276).

(xii) The complex number $\boldsymbol{i}$.

(xiii) The international agreement for expressing $\boldsymbol{\sqrt{-p}}$, for poistive real $\boldsymbol{p}$, in terms of the complex number $\boldsymbol{i}$.

(xiv) Given complex number $\boldsymbol{z = a + bi}$, give $\boldsymbol{\overline{z}}$ and $\boldsymbol{|z|}$.

(xv) Given complex number $\boldsymbol{z = a + bi}$, show $\boldsymbol{z}$, $\boldsymbol{\overline{z}}$, and $\boldsymbol{|z|}$ on an *Argand diagram.*

(xvi) Given complex numbers $\boldsymbol{w}$ and $\boldsymbol{z}$, be able to write $\boldsymbol{w + z}$, $\boldsymbol{wz}$, $\boldsymbol{1/w}$, and $\boldsymbol{w/z}$ in the standard $\boldsymbol{a + bi}$ form.

(xvii) Factor the sum of two perfect squares using $\boldsymbol{i}$.

(xviii) Find the zeros of $\boldsymbol{ax^2 + bx + c}$ for the case where $\boldsymbol{b^2 - 4ac < 0}$.

(xix) The complex-conjugate pairing of complex zeros of a polynomial with real coefficients. This is a big deal in the study of equations describing oscillatory motion.

(xx) Finding a ploynomial with integer coefficients and given integer, rational, irrational, or complex zeros.

(xxi) Concerning algebraic no-calculator rational-function graphing:

(a) Factoring and sign charts.

(b) Long division for end behavior.

(c) Asymptotes on the graph with their correct "cozy."

(d) Tick-mark-free, axes-last, graphs of rational functions based on the above algebra.

6 On page 319 is the chapter-three purple-page "test" which has a full answer key in the back of the book. The following questions are fair-game no-calculator types:

(a) Problem 1 is a 166/2.4 problem.

(b) In problem 2, be able to express the dividend

(i) in Division-Algorithm form (see the blue box on page 266) **and**

(ii) in the form written in the lower-left corner of page 266 (used in section 3.6)

(c) Problem 8b (review this before taking on 3, 5, and 6)

(d) Problem 3

(e) Problem 4 (complex-number arithmetic)

(f) Problems 5 and 6

(g) Problem 7 (from zeros back to the polynomial)

(h) Problem 9 a-d (using factoring, sign charts, and long division to graph rational functions without calculator assistance)

7 On page 385 is the chapter-three purple-page "test" which has a full answer key in the back of the book. The following questions are fair-game no-calculator types:

(a) 7(a) Compare the answer $\boldsymbol{n(t) = 1000 \cdot 8^t}$ with the calculator-intensive BOBA.

(b) 7(b) a no-calculator fractional-power problem

(c) 7(d) get its shape, intercepts, and asymptotic cozying right without calculator interference

(d) 8(a) and 8(b) are 4.1: 77 problems

(e) We'll have to save problems 7(c) and 8(c) for the final – they are logarithm-algebra problems.

8 In the old-test collection we have the fall-2005 test #3 (11/18/05). Relevant problems

(a) Problem 1, a calculator 4.1: 77 problem on compound interest.

(b) Problem 3(b) use long division to graph a hyperbola.

(c) Problem 4: factor a degree-five polynomial.

(d) Problem 5: complex division

(e) Problem 6: a quadratic with complex zeros.

(f) Problem 7: a section-3.6 rational-function graph

(g) Problem 8: matching rational functions, polynomials, and exponentials.

Click here for a partial answer key.

9 Here are some grammar points the corporate we needs to keep in mind (again):

(a) Distributing minus signs through parentheses: $\boldsymbol{-(-3x+4y-2z)=3x-4y+2z.}$

(b) $\boldsymbol{(}$binomial$\boldsymbol{)^2}$ = TRInomial**.**

(c) Crowding errors.

(d) Labeling important points directly with their coordinates. Like, put the label right up next to the thing being labeled. Tickmarks don't serve; coordinate labels do. This applies to points such as vertices and intercepts as well as lines such as asymptotes.