

Last update: Tue Oct 25 17:36:00 MDT 2005 /m143.fa05/handouts143/t2_143_A26/review_suggestions_2.tex

1 This list is now in *final* final form.

2 Test #2 is

Wednesday
10/26/05

3 There will be a with-calculator part of this exam. So have some batteries in your calculator. And bring it to the test.

4 The test will cover the material of Assignments #15 – #29 roughly.

5 Be sure you can

(a) Do function substitutions correctly:

- (i) The assignment-#18 answer key is posted.
- (ii) On the old, 12/18/02, final exam: problems 7 and 9.
- (iii) On assignment #18 we had ***NQ***, ***TI***, ***SYM***, and ***ANT***. Now we have ***QQ***:

$$QQ = \frac{f(x + 2h) - f(x - 3h)}{5h}.$$

If you compute and simplify ***QQ*** for the function

$$f(x) = 5 - 3x - 2x^2,$$

it simplifies to **$-3 - 4x + 2h$** .

(b) Draw graphs at least **25** times as big as your routine capital letters.

(c) Distinguish the equation-graph pairs, page 164, line, circle, and parabola problems

(d) Recognize that an equation has a circle graph (or that it *doesn't*), and then draw the graph of the equation labeled with salient features:

- (i) center
- (ii) radius
- (iii) intercepts

These labels need to be right up on their subjects.

(e) Ungraph. That is, suss out the equation of a given graph:

- (i) Problem 79, page 103
 - (ii) Problems 1 and 4 in the old test #1 for 9/27/02.
- (f) Recognize the page-164 **Friendly-Faces List** which we enhanced with the upper half of a circle
- (g) The section-2.5 **moves**:
- (i) Problem 9 in the old test #1 for 9/27/02.
 - (ii) Shifts horizontally and vertically
 - (iii) Stretch/Squeeze
 - (iv) Reflections through coordinate axes ($y = \sqrt{4-x}$ is the reflection of $y = \sqrt{x}$ over the vertical line $x = 2$, right?)
- (h) Graphing and ungraphing straight lines.
- (i) Detecting straight-line formulas in stories about demand for a product, ticket prices, tree yields.
 - (ii) Slope
 - (iii) Forms: point-slope, slope-intercept
 - (iv) The relation for the equation of L_1 to the equation L_2 for the cases:
 - (A) L_1 is parallel to L_2
 - (B) L_1 is perpendicular to L_2
- (i) A max-min story problem is in the works.
- (j) Be sure you know how the graphs of f and f^{-1} are related.
- (k) Be able to do the algebra to compute an inverse of a function.
- 6** Some common errors, aka “howlers”:
- (a) Not this (click here) kind of howler.
 - (b) On assignment #29, many students have done problem 30 using the notorious *Square-Root Howler*, use of the *bogus* equations:

$$\sqrt{A+B} = \sqrt{A} + \sqrt{B} \qquad \sqrt{A-B} = \sqrt{A} - \sqrt{B}$$

to do $\sqrt{4-x^2} = \sqrt{4} - \sqrt{x^2} = 2 - \sqrt{x^2}$, which Mama Nature does not *LIKE*.

- (c) Another corporate difficulty shows up when we try to do something like evaluating $-B$ when B is a complicated expression. Here's an example:

$$A = (3x - y)^2 (2x + 3y)^2 \quad B = (3x - y)^2 (2x - 3y)^2$$

yields $A - B = 216x^3y - 144x^2y^2 + 24xy^3$.

- (d) If $f(x) = \sqrt{9 - x^2}$ and $g(x) = \sqrt{4 - x^2}$, then $(f \circ g)(x) = \sqrt{5 + x^2}$ and $(g \circ f)(x) = \sqrt{x^2 - 5}$.

7 Old, but still-live, business: be able to

- (a) **PEMDAS**: Google gets you the Elko Public Schools, and a more-advanced Purplemath discussion. This is important for correctly directing computers (check problem 2, test #1), as well doing algebra correctly.
- (b) Add algebraic fractions using the *Least Common Denominator*
- (c) Parse a quadratic-in- x -and- y equation to see whether it's a circle.
- (d) Add algebraic fractions using the *Least Common Denominator*
- (e) Decode **negative exponents** in expressions.
- (f) Decode **fractional exponents** in expressions.

8 Purple-page end-of-chapter problems with all the answers BOB!

- (A) For Chapter 1, page 133: problems 19, 20, 21
- (B) For Chapter 2, page 244-245: all except problem 3.