MATH 143 – Review Sheet for Test #3 – 3/19/08

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1 This list is now in final final form.

2 Test #3 is

   Wednesday
   4/23/08.

3 The test will cover the material of Assignments #17 – #24, roughly, that is, sections 2.8, 3.1, 3.2, 3.6, 4.1, 4.2, and maybe some 4.3 material

   The calculator part will revolve around 4.1: 77.

4 Topic List:

   (i) You are supposed to know the formula for the difference quotient. And how to simplify a difference quotient. Here are some problems:
   http://math.boisestate.edu/~kerr/143sp07/PDF143/DQprobs214_1.pdf
   and an answer key:
   http://math.boisestate.edu/~kerr/143sp07/PDF143/DQprobs214_2.pdf

   (ii) Apply sign charts and polynomial division to graphing rational functions.
   3.6: 15-23 odds. Most of these have the $x$-axis as an asymptote. But two do not. One has a slant asymptote. Also 3.6: 45, 47, 49, 51
   Here are some possibly helpful “asymptote” pages:
   http://www.purplemath.com/modules/asymtote.htm

   (iii) Be able to compute the inverse of a given function. Sometimes the computation will tell you that no inverse exists. Know how to recognize this.

   (iv) Our page-166 table has been augmented and enhanced by the addition of the generic exponential-function graph and its corresponding logarithm graph. This gives more things to apply the section-2.4 transformations to.

   (v) Given a factored polynomial, be able to use this polynomial’s intercepts, sign-change information, and end behavior to draw a rough graph of the polynomial (section 3.1).
   3.1: 11, 13, 17, 19, 21 (cubic sidle)
(vi) Know how to do polynomial long division, and know what you’ve got when you have finished the process.

3.2: 3, 5, 9, 11

We have used this to rewrite a quotient of polynomials in order to see how the quotient behaves relative to horizontal and oblique asymptotes.

3.6: 53 \( r(x) = 3 + \frac{6x + 15}{(x - 3)(x + 1)} \) so that the curve approaches its horizontal asymptote from above on the far right, and from below on the far left.

(vii) Synthetic division (also sometimes known as “synthetic substitution”) comes in handy, especially when we loop around to do the middle part of chapter 3.

3.2: 23, 27, 29, 33

(viii) Know what \( y = \log_A(x) \) means. Know how to write \( y = A^x \) in terms of logarithms.

4.2: 3-13 odds.

(ix) Given a function graph, determine if the function has an inverse, and, if it does have an inverse, find the graph, even though you don’t know a formula for the function.

2.8: 69 and 2.8; 1, 3, 5. Also 235: 48(e).

5 Section 3.1: 23-35 odds

Purple-Page Test on page 238: problems 10 and 11.

Purple-Page Test on page 319: problems 1, 2, 9.

Purple-Page Test on page 385: problems 1, 2, 3a, 3c, 8a, 8b.

6 MATH-143 Test #2 for 10/26/05 has inverse problem 4c.

7 MATH-143 Test #3 for 11/18/05 has the following problems relevant to us at our current stage:

- 1 on compound interest.
- 3 on transformed hyperbolas, their graphs and inverses (Assignment #20).
- 7 on graphing a rational function (the 4/14/08 quiz goes after part of this).
- 8

8 The MATH-143 Test #2 for 11/4/02 problems relevant to us at our current stage:

- 1 (a compound-interest problem different from problem 1 in the 11/18/05 exam)
• 2 (find domain)
• 3 (section-3.1 graph of a factored polynomial)
• 4 (transformed hyperbola graph)
• 7
• 8 and 9 on rational-function graphs

9 The MATH-143 Test #3 for 12/6/02 problems relevant to us at our current stage:

• 1 (Is this a replay or not?)
• 7 (like our fire-alarm problem)
• 8 (transformed exponential graph)
• 10 (finding an inverse)