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/m170.sp08/handouts170/t3_170_425/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

Friday
4/25/08.

3 The test will cover the material of Assignments #22 – #31, roughly, that is, sections 3.7-3.10 and 4.1-4.4.

Let's not have a calculator part.

4 Topic List

- (i) The *linearization* of a function at a point is the same thing as the tangent line at the point.
- (ii) You need to know how to use implicit differentiation to find the derivative of an inverse function.
- (iii) You need to know the derivatives of **arcsin**, **arccos**, and **arctan**.
- (iv) A MATH-147 issue: given the value of a trig function of an angle α , find the values of the other trig functions of α .
- (v) Related rates. Bear in mind that the grading rubric looks for things like this:
 - 1 a diagram
 - 2 driving variable identified on the diagram
 - 3 the rate of change of the driving variable written out explicitly (signs!)
 - 4 the driven variable identified on the diagram
 - 5 clean statement of an equation relating the driving and driven variables (“dynamic precursor”).
 - 6 the derivative of the equation
 - 7 “the instant in question” substituted
 - 8 the driven variable’s rate of change
 - 9 prose answer to the question asked.
- (vi) Compute a differential.

- (vii) **No hyperbolic-function questions.**
- (viii) Finding absolute extremes of a function on a closed and bounded interval. End points and interior-point extremes.
- (ix) Statement of the Mean-Value Theorem. And the useless problem of computing the Mean-Value-Theorem c .
- (x) First-derivative sign changes and **stickman**.
- (xi) Features of the graph of f described by the signs of $f'(x)$ and $f''(x)$. Local extremes and inflection points.
- (xii) Use of factoring and sign charts to determine **Stickman f** and concavity intervals (the Assignment-#31 agenda).
- (xiii) The “clock” values of the trig functions: click here for a table you ought to be able to fill out in three or four minutes.
- (xiv) Click here for a derivative quiz. Problems 1 and 2 are fair game. Problem 3 is a bit too rich yet. Click here for a putative answer key.

5 Suggested Problems

- (i)

6 Comments on Old Tests

- (i) **MATH 170 031 Test #2 for 6/30/05:**

- Problem 1 is still live business.
- Problem 2 is the **key** to the Assignment-#31 graphing problems.
- Problems 3 and 3 could also appear.
- Problem 6 on finding derivatives would be fair game.
- Problem 7
- Problem 8: assume the derivatives of **sin** and use it to find the derivative of **csc**.
- 9(b) is fair game.
- We’ve done 9(c) and 9(d) in class.

- (ii) **MATH 170 031 Test #3 for 7/14/05:**

- Problem 1: derivatives and Laws of Logs.

- Problem 2: variables on pix.
 - Problem 3: derivatives and Laws of Logs.
 - Problem 4: derivative of an inverse function.
 - Problem 6: compute a differential.
 - Problem 7: what does the Mean-Value Theorem say?
 - Problem 8: absolute extremes on an interval.
 - Problem 9: related rates.
 - Problem 10: highs, lows, and inflection points (sign-change charts).
 - Problem 11: sign changes and graph behavior.
- (iii) **MATH 170 006 Test #1 for 2/11/05:**
- Problem 3.
 - Problem 6, except for parts (h), (i), (j).
- (iv) **MATH 170 001 Test #2 for 3/11/05:**
- Problem 4 on computing derivatives.
 - Problem 5.
 - We've done problem 6, on the basic trig derivatives, in class.
 - Problem 7, except for part (f).
 - Problem 8, culled from homework papers.
- (v) **MATH 170 001 Test #3 for 4/8/05:**
- Problem 1
 - Problem 2: compute a differential
 - Problems 3 and 4: computing derivatives, factoring them, and evaluating them a a point.
 - Problem 6: absolute extremes on an interval.
 - Problem 8: related rates (can you get your signs right?)