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Math 115-064 Exam 2 Reflection

1. How much test-preparation time did you spend on each of the following activities?
   a. _____ (Re)-reading the textbook
   b. _____ (Re)-watching the provided videos
   c. _____ (Re)-reading your own notes
   d. _____ Re-solving problems you'd solved already (quizzes?)
   e. _____ Solving worksheet problems you didn't do in class
   f. _____ Solving problems from the textbook
   g. _____ Solving old exam problems
   h. _____ Solving group practice problems
   i. _____ Explaining material to a peer
   j. _____ Other (Specify!:_____)

2. Using your answers to the previous question....
   a. Around how much time did you spend preparing? _____
   b. What % of your prep time was spent on *passive** vs *active** studying?
      Passive: _____% Active: _____ %
   c. What percentage of your prep was done alone vs with one or more peers?
      Alone: _____% Together: ____%

   *Note on *passive vs active*: Active = you're actively "testing" yourself, e.g., by solving new problems, by quizzing yourself before re-reading, etc
   Passive = you're taking in info, by (re)-reading, (re)-watching, or copying down solutions into your notes (without solving it yourself first).

3. After looking over your graded exam, estimate the percentage of points you lost due to each of the following errors (make sure the % add up to 100).
   a. _____% Not knowing how to approach problem
   b. _____% Mis-understanding calc concept
   c. _____% Arithmetic/algebra errors
   d. _____% Misread instructions
   e. _____% Test anxiety/time management
   f. _____% Insufficient work shown
   g. _____% Other (Specify!: _____)

4. Based on the previous estimates & your approach to studying for this exam, what will you do differently in preparing for the final exam? For instance, will you change your study habits or try to sharpen particular skills? **Please be specific**. (If you do not plan to change anything, explain what about your current strategy works well for you). **It might help to answer question 5 first, since the final is cumulative & topics will reappear!**
   Also, what can I do to help?

5. Below are the learning objectives on Exam 2. For each one that doesn't have N/A, self-assess your skills using the "check" scale below. Then, tally your exam score for that LO. Finally, <u>if your score & self-assessment don't match</u>, explain!

   Note: Remember that identifying *when* to use a skill is a part of mastering it. So if you had a problem that you had no idea how to approach (or kind of knew, but couldn't figure out how to finish), then you probably haven't fully mastered the skill.

Key for assessing mastery ("check" scale)

- ✔+ I am very confident I have mastered this skill.
- ✔ I think I have probably/mostly mastered this skill.
- ✔– I am still working on mastering this skill.
- ?? I have some major confusion/questions about this skill.

Derivative Concepts: 2.4–2.6

I. Interpret the meaning of the derivative of a function, or the inverse of a function, at a point in a specific context; in particular, write a complete, correct sentence about a small change in input and the corresponding approximate change in output, that could be understood by someone who knows no calculus. (2.4)
Problems: #9a **Score:** ___ / 2 **Self-Assessment:**
Explain:

J. Given a function, determine information about its second derivative, such as where it is positive and negative; and given a graph or other information about the second derivative of a function, determine properties of the original function, such as where it is concave up and concave down. (2.5)
Problems: #6 **Score:** ___ / 4 **Self-Assessment:**
Explain:

K. Given a graph or formula for a function, identify points at which the function is not differentiable. (2.6)
Problems: #1d **Score:** ___ / 2 **Self-Assessment:**
Explain:

L. Given a piecewise function, find the values of given parameters that make the function differentiable at a specified point. (2.6)
Problems: #3d **Score:** ___ / 3 **Self-Assessment:**
Explain:

M. State and explain the meaning of the Mean Value Theorem; given a function, determine whether the hypotheses and/or conclusion of the Mean Value Theorem are satisfied on a given interval. (3.10)
Problems: #1d **Score:** ___ / 2 **Self-Assessment:**
Explain:

Derivative Procedures: 3.1–3.6

** Actually MANY of the problems require procedures. Here I wrote out the main ones, but if the other problems (e.g., #7, #8, #9b) affects your self-assessment, mention it!

A. Know and use the rules to find the derivatives of power functions, exponential functions, and the sine, cosine, tangent, and natural log functions. (3.1, 3.2, 3.5, 3.6)
Problems: #1b,c, #3c **Score:** ___ / 7 **Self-Assessment:**
Explain:

B. Know and use the sum, difference, product, quotient, and chain rules to find the derivatives of combinations of functions. (3.3, 3.4)
Problems: #1b,c, #3c **Score:** ___ / 7 **Self-Assessment:**
Explain:

C. *Know and use the rules to find the derivatives of the arctan and arcsin functions, and the formula for the derivative of a general inverse function. (3.6)
Problems: #1a, #9c **Score:** ___ / 5 **Self-Assessment:**
Explain:

D. Given a function or formula, identify the correct rule(s) to use. (3.1-3.6)
Problems: #1a,b,c, #3c **Score:** ___ / 7 **Self-Assessment:**
Explain:

More Derivative Concepts: 3.7 & 3.9

A. Given an implicit function, identify points on its graph. (3.7)
   Problems: #8b **Score:** ___ / 4 **Self-Assessment:**
   Explain:

B. Given an implicit function, apply implicit differentiation to find a formula for the derivative in general and at specific points, find an equation for the tangent line at a given point, and recognize where the graph of the implicit function has horizontal and vertical tangents. (3.7)
   Problems: #8 **Score:** ___ / 8 **Self-Assessment:**
   Explain:

C. Find a formula for the linear approximation of a function at a given point, and use it to approximate the value of the function at a nearby point. (3.9)
   Problems: #3a **Score:** ___ / 2 **Self-Assessment:**
   Explain:

D. Use concavity to determine (if possible) whether the linear approximation of a function is an under- or over-estimate. (3.9)
   Problems: #3b **Score:** ___ / 1 **Self-Assessment:**
   Explain:

Derivative Applications: 4.1–4.3

A. Given a formula for a function, find its critical points, & use the 1st and 2nd Derivative Tests to classify these as local extrema, including all needed justification. (4.1)
   Problems: #7a,b **Score:** ___ / 6 **Self-Assessment:**
   Explain:

B. Given a formula for a function, find its inflection points, including all needed justification. (4.1)
   Problems: #7c **Score:** ___ / 6 **Self-Assessment:**
   Explain:

C. Given a formula for a function, use the Extreme Value Theorem and/or limiting end behavior to find all global extrema, including all needed justification. (4.2)
   Problems: #5 **Score:** ___ / 4 **Self-Assessment:**
   Explain:

D. Given a table (and any other necessary information) or a graph of a function or its derivative, identify the locations of critical points, local and global extrema, and inflection points. (4.1, 4.2)
   Problems: #2 **Score:** ___ / 10 **Self-Assessment:**
   Explain:

E. Set up functions modeling a contextual optimization problem, including determining an appropriate domain; and solve for the global optimum, including all necessary justification. (4.3)
   Problems: #4 **Score:** ___ / 8 **Self-Assessment:**
   Explain:

F. Set up functions modeling a contextual situation involving related rates, and solve for rates of interest. (4.6)
   Problems: #9b,c **Score:** ___ / 5 **Self-Assessment:**
   Explain: