Math 1A Quiz 6
Thu Dec 3, 2020 DUE Sun Dec 6, 2020 @ 6pm in Canvas

SCORE: _____ / 20 POINTS

INSTRUCTIONS

[A] For this test, you may consult your lecture notes, the Zoom recordings linked on the instructor's website, your textbook sections 2.1-2.3, 2.5-2.8, 3.1-3.6, 3.9-3.10, 4.1-4.5, 4.7, 4.9, 10.1-10.2 and the homework you did for those sections.

You may **not** use any other material located on the instructor's website nor covered in any other sections of your textbook.

You may **not** consult any person, nor any written/printed material, website, software, app or other electronic resource, nor any calculator (unless instructed), computer, phone or other electronic device.

[B] For all algebraic work, the general rule is that,
if you can't do the work in your head without writing something down, write it in your test.

However, some questions may require you to show work that you can do in your head.
If you do **not** show that work written properly, you will **not** get the credit.

For each derivative that requires the product, quotient and/or chain rule,
you must show all the factors and terms from the rule before you simplify.

eg. $\dfrac{d}{dx}\dfrac{xe^{2x}}{1+e^x}$ = $\boxed{\dfrac{(1(e^{2x})+xe^{2x}(2))(1+e^x)-xe^{2x}(e^x)}{(1+e^x)^2}}$ ⬅ **THIS STEP IS REQUIRED**

$$= \frac{e^{2x}((1+2x)(1+e^x)-xe^x)}{(1+e^x)^2} = \frac{e^{2x}(1+2x+e^x+xe^x)}{(1+e^x)^2}$$

[C] **Handwrite** your solutions to the questions on clean 8½″ × 11″ paper (or equivalent).

[D] Your solutions to the questions must be in the same order as the questions in this test.

(You may write the solutions to each question on separate pages, and sort them in order afterwards.)

[E] You do not need to copy the questions onto your paper.

Just show your organized and clearly written work and final answers.

[F] Writing which is illegible to the instructor will earn 0 points.

[G] All final answers must be completely simplified to receive full credit.

[H] Upload a **single** clear & legible PDF of your completed test to Canvas no later than Sun Dec 6 @ 6pm Pacific Time.

The solution will be posted to my website shortly after that time, and all work submitted after that will earn 0 points.

[1]   Legibly write the text from the box below (do **not** write in cursive), and sign your name directly below your writing.
          If you skip this step or your writing is illegible to me, your quiz will not be counted for credit.

"I am a principled and honorable person who can be trusted.
I pledge to uphold the De Anza College Student Code of Conduct.

By signing below, I confirm that the work shown on this test is strictly my own.
Other than the resources listed in Instruction [A] of this test,
I did not consult any person, nor any printed/written material, app, software, website or other electronic resource,
nor any computer, phone, calculator or other electronic device."

NOTE: The De Anza College Student Code of Conduct can be found at
          https://go.boarddocs.com/ca/fhda/Board.nsf/goto?open&id=9U2UC77B2DA5

For all questions below, show proper algebraic word/logic for your answers
Correct answers without proper work/logic will earn 0 credit

Final answers should not use decimals

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[2]   **[10½ POINTS]** Find the following antiderivatives.

[a] $\displaystyle\int \frac{(6x^3 - 5)^2}{4x^7}\,dx$ [b] $\displaystyle\int \frac{11x^3 + 4x^2 - 2}{\sqrt[3]{x}}\,dx$

[c] $\displaystyle\int \frac{2\cos x - 3}{\sin^2 x}\,dx$ [d] $\displaystyle\int \frac{x^3 - x^2 + x}{x^2 + 1}\,dx$

                                                            HINT: First perform polynomial long division.

[3]   **[9½ POINTS]** Consider the parametric equations $\begin{aligned} x &= 6t^2 - 3t \\ y &= 2t - 8t^2 \end{aligned}$.

[a]   Find the $(x,\,y)$ co-ordinates of all $x-$intercepts **analytically**.
          HINT: You will first need to find the values of t corresponding to those $x-$intercepts.

[b]   One of the $x-$intercepts in [a] is negative. Find the equation of the tangent line at that $x-$intercept.

[c]   Find $\dfrac{d^2 y}{dx^2}$.