Homework Set 7

Due: Nov 12, 2018 (at the beginning of class)

To be handed in:

Please write your solutions to Problem 1 (a)-(e) *on only 1 sheet of paper.*

1. Let $f(x) = \dfrac{x^2}{2} - \dfrac{5}{2} \ln \left(1 + x^2\right)$ and $I = [-3, 3]$.

   (a) Find all the critical points of $f(x)$ on the interval I.

   (b) On what parts of the interval I is $f(x)$ increasing?

   (c) On what parts of the interval I is $f(x)$ decreasing?

   (d) Which of the critical points found in (a) are local minima and maxima?

   (e) What are the global minimum and maximum of $f(x)$ on I?

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2. Textbook (5th edition) Section 4.1, Exercises $7 - 10$, $11 - 14$, $21 - 25$, 71, 72

3. Textbook (5th edition) Section 4.3, Exercises $3 - 12$, $19 - 20$, $75 - 78$