

Quiz 6: In-Class and Open Notes**NO CALCULATORS ALLOWED**

11/16/12

Read directions carefully and show all your work. Partial credit will be assigned based upon the correctness, completeness, and clarity of your answers. *Don't forget, you are not allowed to use a calculator for this quiz!*

- 1. You must work on this quiz with at least one other person but no more than 3 other people.**
Please list the names of all students with whom you collaborated on this in-class, open notes quiz.

2. (5 pts) Consider $f(x) = 2x^3 - x - 2$.

- (a) Find two values, a and b , such that $f(a) < 0$ and $f(b) > 0$.

- (b) State the first hypothesis of the *Intermediate Value Theorem*. In other words, what nice property do we require of f on $[a, b]$?

- (c) Let $y = 0$, notice that $f(a) < y < f(b)$. Does the Intermediate Value Theorem apply in this case? If so, what does the IVT allow you to conclude about f on $[a, b]$?

3. (5 pts) Consider $f(x) = \sqrt{x}$.

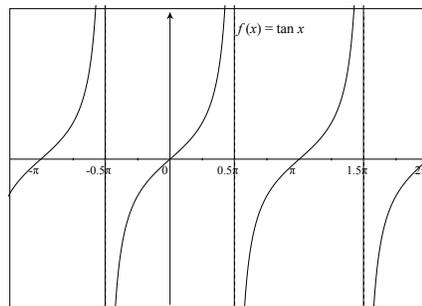
- (a) State the hypothesis of the *Extreme Value Theorem*.

- (b) What does the *Extreme Value Theorem* say about f on the interval $[0, 1]$?

- (c) Does the *Intermediate Value Theorem* hold for $f(x) = \sqrt{x}$ on $[0, 4]$ and $y = 3$? Explain your answer.

4. (5 pts) Consider $f(x) = \tan x$.

(a) State all hypotheses of the *Mean Value Theorem*.



(b) Are the hypotheses listed in (a) satisfied by the function $f(x) = \tan x$ on the interval of x -values $\left[\frac{\pi}{4}, \frac{3\pi}{4}\right]$?
Be specific about how all hypotheses are satisfied, or about which hypotheses fail.

5. (5 pts) Each of the following is **FALSE**. Give an example to show why the statement is false.

(a) If f is continuous, then f is differentiable.

(b) If $F'(x) = G'(x)$ then $F(x) = G(x)$ for all values of x .