Calculus Quiz 7

1. (5 pts) Let $f(x) = \dfrac{(x+1)^2}{1+x^2}$

- **a.** Find the intervals of increase or decrease.
- **b.** Find the local maximum and minimum values.
- **c.** Find the intervals of concavity and the inflection points.
- **d.** Find the asymptotes.
- **e.** Sketch the graph of $f(x)$.

2. (5 pts)

a. Is it true that $f''(c) = 0$ implies $x = c$ is an inflection point of f? Explain your answer.

b. Show that for any $|\sin b - \sin a| \leq |b - a|, \ \forall\, a, b \in \mathbb{R}$.