

FALL- 2017 - ANALYSIS 2 - Homework

- 1) Show that if $f(x)$ is differentiable at x_0 , then $f'(x) = \lim_{h \rightarrow 0} \left(\frac{f(x_0 + h) - f(x_0 - h)}{2h} \right)$
- 2) Find a function for which the limit above exists but $f'(x)$ does not
- 3) Finish the proof of Darboux's Theorem...completely
- 4) Let $f(x)$ have bounded derivative on (a, b) . Show f is uniformly continuous on (a, b) .
- 5) Show that $|\sin a - \sin b| \leq |a - b|$