Math 131A Winter 2018: Homework 8, Due 3/16

1-2. 28.8, 28.10.

 $3-4.\ 29.5,\ 29.12.$

5. Let $f:(a,b) \to \mathbb{R}$ be differentiable and let $c \in (a,b)$. Suppose that $\lim_{x\to c} f'(x)$ exists and is finite. Show that this limit must be f'(c).

6. Let $f : [a, b] \to \mathbb{R}$ be continuous, and differentiable on (a, b). Assume that f' is strictly increasing. Show that for any $c \in (a, b)$ such that f'(c) = 0 there exist $x_1, x_2 \in [a, b], x_1 < c < x_2$ such that

$$f'(c) = \frac{f(x_2) - f(x_1)}{x_2 - x_1}.$$

7-8. 32.3, 32.6.

[Suggested Exercises that will not be graded:] 28.15, 32.7, 32.8. 33.4, 33.6.