

MATH 150A-QUIZ 6, WINTER 2020

Name: _____

1. (5 pts) Let $f, g : I \rightarrow \mathbb{R}$ both be continuous at ξ . Show that the product fg is continuous at ξ .

Here you may either prove it by definition or prove it via the following theorem that we proved in class (Theorem 2.2): $h : I \rightarrow \mathbb{R}$ is continuous at $\xi \in I$ if and only if the following statement holds true: for any sequence $\{x_n\}$ in I with $\lim_{n \rightarrow \infty} x_n = \xi$, it holds that $\lim_{n \rightarrow \infty} h(x_n) = h(\xi)$.

2. Consider a function $f(x) = \sqrt{x} : [0, \infty) \rightarrow \mathbb{R}$.

- (1) (1 pts) State the definition that f is continuous at a $\xi \in [0, \infty)$. Then state the definition that f is continuous on $[0, \infty)$.
- (2) (4 pts) Show by definition that f is continuous at every $\xi > 0$. *Note here you don't need to do the case when $\xi = 0$.*