

Homework Set 5

DUE: NOV 8, 2021 (VIA BLACKBOARD, BY 11.59PM)

To be handed in:*Please remember that all problems will be graded!*

1. Give a rigorous proof that $f(x) = \frac{1}{1-x^2}$ is continuous at any $x_0 \in (-1, 1)$, explicitly finding $\delta > 0$ for each $\varepsilon > 0$. Does the δ you found depend on x_0 or only on ε ?
2. (a) Is the function $f(x) = \frac{1}{1-x^2}$ uniformly continuous on $[-\frac{1}{2}, \frac{1}{2}]$? Justify.
(b) Is the function $f(x) = \frac{1}{1-x^2}$ uniformly continuous on $(-1, 1)$? Justify.