

Homework 6

For the following problems use only the definition of differentiability.

1. Prove that $f(x) = 3x^2 + 5x$ is differentiable at $x = 2$.
2. Prove that $f(x) = \sqrt[3]{x}$ is differentiable at $x = 8$.
3. Prove that $f : (0, \infty) \rightarrow \mathbb{R}$, $f(x) = 1/x^2$ is differentiable everywhere.
4. Find the points where $f : \mathbb{R} \rightarrow \mathbb{R}$, $f(x) = x^{2/5}$ is differentiable.
5. Find the points where $f(x) = \frac{x+3}{x-5}$ is differentiable.