Exercise 1 *Let*

$$g(x) = \begin{cases} \dfrac{x^3 - 8}{x - 2} & \text{if } x < 1, \\ x^3 + 1 & \text{if } x > 1. \end{cases}$$

Does $\lim_{x \to 2} g(x)$ *exist? If it does, give its value. Otherwise write DNE.*

$$\lim_{x \to 2} g(x) = \boxed{9}$$

Hint: *Note that, close to* $x = 2$*, the rule for* $g(x)$ *is* $x^3 + 1$*.*