Quiz 2 **Your name:**

Your TA's name:

1. Find the limit, if it exists. If the limit does not exist explain why: $\lim_{x \to -1} \dfrac{3|x+1|}{4x+4}$.

2. Use the Intermediate Value Theorem to show that there is a root of the equation $\sqrt[3]{x} - 1 = -2x$ in the interval $(0, 1)$.

3. Find an equation of the tangent line to the curve $y = 2 + \sqrt{x}$ at the point $(1, 3)$. (Find a slope of the tangent line using its definition, that involves limit).

4. Find the derivative of the function $f(x) = \dfrac{x}{x-1}$ using the definition of a derivative. State the domain of the function and the domain of its derivative.