

$$3) \lim_{x \rightarrow 0} \frac{\sqrt[3]{x+1} - 1}{x} = \frac{\sqrt[3]{(x+1)^2} + \sqrt[3]{x+1} + 1}{\sqrt[3]{(x+1)^2} + \sqrt[3]{x+1} + 1} = \lim_{x \rightarrow 0} \frac{x+1-1}{x(\sqrt[3]{(x+1)^2} + \sqrt[3]{x+1} + 1)} = \frac{1}{1+1+1} = \frac{1}{3}$$