Quiz 0, Math 111, Section 1 (Vinroot) Name: Student 3 20/20

(a): Compute the following limit if it exists, and if it does not exist but is infinite, describe the infinite limit and explain (factor the denominator):

$$\lim_{x \to -1^-} \frac{x-2}{x^2-3x-4}$$

$$= \lim_{x \to -1^-} \frac{x-2}{(x+1)(x-4)} = \boxed{-\infty}$$

$\frac{-}{(-)(-)} = -$

$x-2 \to -3$

$x-4 \to -5$

$x+1 \to 0$

but $x<-1$

so $x+1<0$

denom goes to 0, numer does not, expression stays negative

Good

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(b): Compute the following limit (if it exists), making your steps clear: $\lim_{x \to 0} \sqrt[5]{\frac{x^3-1}{3x^2+2x+1}}$.

$$= \sqrt[5]{\lim_{x \to 0} \frac{x^3-1}{3x^2+2x+1}} = \sqrt[5]{\frac{0^3-1}{3(0^2)+2(0)+1}} = \sqrt[5]{-1} = \boxed{-1}$$

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Property of limit, odd root so defined

Since denom is $\neq 0$, we know we can directly substitute

← Wouldn't hurt to mention these things