(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):

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

\[
= \lim_{x \to -1} \frac{x - 2}{(x + 1)(x - 4)}
\]

\[
= \lim_{x \to -1} \frac{5}{(-5)(-)}
\]

\[
= \frac{-8}{-\infty}
\]

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

\[x - 2 \to -3\]
\[x - 4 \to -5\]
\[x + 1 \to 0\]
but \(x < -1\)
so \(x + 1 < 0\)

Good

\[10/10\]

(b): Compute the following limit (if it exists), making your steps clear:

\[
\lim_{x \to 0} \frac{x^3 - 1}{3x^2 + 2x + 1}
\]

\[
= \sqrt{\lim_{x \to 0} \frac{x^3 - 1}{3x^2 + 2x + 1}}
\]

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

\[
= \sqrt{-1} = \sqrt{-1}
\]

Property of limit, odd root so defined

Since denom is \(\neq 0\), \(\leq \) wouldn't hurt to mention these

Since we know we can directly substitute

\[10/10\]