Nome: Eduardo Henrique de Almeida Izidorio

Matricula: 2020000315

Disciplina: Cálculo I

Exercícios

1. Determine, se existir, os limites abaixo:

c) $\lim\limits_{x \to 2} \dfrac{x-2}{x^3-8} \to \dfrac{2-2}{2^3-8} = \dfrac{0}{0}$ indeterminado

$\lim\limits_{x \to 2} \dfrac{x-2}{x^3-8} \to \dfrac{x-2}{x^3-2^3} \to \dfrac{x-2}{(x-2)\cdot(x^2+2x+4)} \to \lim\limits_{x \to 2} \dfrac{1}{x^2+2x+4}$

$\to \lim\limits_{x \to 2} \dfrac{1}{2^2+2\cdot2+4} = \dfrac{1}{12}$ "

e) $\lim\limits_{x \to -2} \dfrac{x^3+8}{x^4-16} \to \dfrac{(-2)^3+8}{(-2)^4-16} = \dfrac{0}{0}$ indeterminado

$\lim\limits_{x \to -2} \dfrac{x^3+8}{x^4-16} \to \dfrac{x^3+8}{x^4-16} \to \dfrac{x^3+2^3}{x^4-2^4} \to \dfrac{(x+2)\cdot(x^2-2x+4)}{(x-2)(x+2)(x^2+4)}$

$\to \dfrac{(x^2-2x+4)}{(x-2)(x^2+4)} \to \dfrac{(x^2-2x+4)}{(x^3-2x^2+4x-8)}$

$\lim\limits_{x \to -2} \dfrac{x^2-2x+4}{x^3-2x^2+4x-8} \to \dfrac{(-2)^2-2\cdot(-2)+4}{(-2)^3-2\cdot(-2)^2+4\cdot(-2)-8} \to \dfrac{12 \div 2}{-16 \div 2} \to \dfrac{6 \div 2}{-8 \div 2} = \dfrac{3}{-4}$

$\lim\limits_{x \to -2} \dfrac{x^2-2x+4}{x^3-2x^2+4x-8} = \dfrac{3}{-4}$ "

g) $\lim\limits_{x \to 16} \dfrac{x-16}{\sqrt{x}-4} \to \dfrac{16-16}{\sqrt{16}-4} \to \dfrac{0}{0}$ indeterminado

$\lim\limits_{x \to 16} \dfrac{x-16}{\sqrt{x}-4} \to \dfrac{x-16}{\sqrt{x}-4} \cdot \dfrac{\sqrt{x}+4}{\sqrt{x}+4} \to \dfrac{(x-16)(\sqrt{x}+4)}{(x-16)}$

$\lim\limits_{x \to 16} \sqrt{x}+4 \to \sqrt{16}+4 \to 4+4 \to 8$ "