Plantão de dúvidas

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(d) $\lim_{x\to 1} \dfrac{2x^2-3x+1}{(x-1)} = \dfrac{0}{0}$ (FATORAÇÃO)

$\lim_{x\to 1} \dfrac{2\cancel{(x-1)}(x-1/2)}{\cancel{(x-1)}} = \lim_{x\to 1} 2(x-1/2)$

$= \lim_{x\to 1} 2x-1$

$= 2(1)-1 = \underline{1}$ //

$ax^2+bx+c = a(x-x_1)(x-x_2)$

raízes → Báskara

$2x^2-3x+1=0$

$\Delta = (-3)^2-4(2)(1) = 9-8 = 1$

$x = \dfrac{-(-3)\pm\sqrt{1}}{2(2)} = \begin{cases} x_1 = \dfrac{3+1}{4} = 1 \\ x_2 = \dfrac{3-1}{4} = \dfrac{1}{2} \end{cases}$

$ax^2+bx+c = \overset{2}{a}(x-1)(x-\frac{1}{2})$

$2x^2-3x+1 = 2(x-1)(x-\frac{1}{2})$

(i) $\lim_{x\to 1} \dfrac{{}^{*}\, x^4-1}{3x^2-4x+1}_{**} = \dfrac{1^4-1}{3(1)^2-4(1)+1} = \dfrac{1-1}{3-4+1} = \dfrac{0}{0}$ ∄

$*$ $x^4-1 = (x^2)^2 - (1)^2$ (a, b)

$a^2-b^2 = (a+b)(a-b)$

$= (x^2+1)(x^2-1)$

$x^2-1^2 = (x+1)(x-1)$ (a, b)

$(x^2+1)(x+1)(x-1)$

$**$ $3x^2-4x+1 = a(x-x_1)(x-x_2) = \boxed{3(x-1)(x-\frac{1}{3})}$

$\Delta = (-4)^2-4(3)(1) = 16-12 = 4$

$x = \dfrac{-(-4)\pm\sqrt{4}}{2(3)} = \begin{cases} x_1 = \dfrac{4+2}{6} = 1 \\ x_2 = \dfrac{4-2}{6} = \dfrac{1}{3} \end{cases}$

OBS: precisei de duas fatorações no numerador!

$\lim_{x\to 1} \dfrac{(x^2+1)(x+1)\cancel{(x-1)}}{3\cancel{(x-1)}(x-1/3)} = \lim_{x\to 1} \dfrac{(x^2+1)(x+1)}{3(x-1/3)} = \dfrac{(1^2+1)(1+1)}{3.(1-1/3)} = \dfrac{2.2}{\cancel{3}.(\frac{2}{\cancel{3}})} = \dfrac{4}{2} = 2$ //

$\dfrac{1}{1} - \dfrac{1}{3} = \dfrac{3-1}{3} = \dfrac{2}{3}$

$\dfrac{6}{3} = 2$

$P = \{2, 3, 5, \ldots\}$

$\dfrac{1}{1} - \dfrac{1}{3} = \dfrac{3-1}{3}$

$= \dfrac{2}{3}$

1 3	
1 1	3

EXEMPLO:

$\dfrac{1}{3} + \dfrac{2}{4} - \dfrac{3}{2} =$

3 4 2	
3 2 1	2
...	2

$$\frac{1}{3}+\frac{2}{4}-\frac{3}{2}=\frac{4+6-18}{12}=\frac{-8^{\div 2}}{12_{\div 2}}=-\frac{4^{\div 2}}{6_{\div 2}}=\boxed{\frac{-2}{3}}$$

3	4	2	
3	2	1	2
3	1	1	2
1	1	1	3
			12

(q) $$\lim_{x\to a}\frac{\overbrace{\sqrt{x}-\sqrt{a}}^{a-b\ (a+b)}}{\sqrt{x^2-a^2}}\ (a+b)=\frac{0}{0}$$

$$=\lim_{x\to a}\frac{\sqrt{x}-\sqrt{a}\times(\sqrt{x}+\sqrt{a})}{\sqrt{x^2-a^2}\times(\sqrt{x}+\sqrt{a})}=\lim_{x\to a}\frac{(\sqrt{x})^2-(\sqrt{a})^2}{\underbrace{\sqrt{(x+a)(x-a)}}_{\sqrt{ab}=\sqrt{a}.\sqrt{b}}(\sqrt{x}+\sqrt{a})}$$

a^2-b^2

$a^2-b^2=(a+b)(a-b)$

$$\frac{a^n}{a^m}=a^{n-m}$$

$$a^n.a^m=a^{n+m}$$

$$=\lim_{x\to a}\frac{x-a}{\sqrt{x+a}.\sqrt{x-a}.(\sqrt{x}+\sqrt{a})}=\boxed{\frac{?}{0}}$$

$=0$

$$\sqrt{a}=a^{1/2}$$

$$\frac{a^n}{a^m}=a^{n-m}$$

$$\frac{x-a}{\sqrt{x-a}}=\frac{(x-a)^1}{(x-a)^{1/2}}=(x-a)^{1-\frac{1}{2}}=(x-a)^{1/2}=\sqrt{x-a}$$

$$=\lim_{x\to a}\frac{\sqrt{x-a}}{\sqrt{x+a}(\sqrt{x}+\sqrt{a})}=\frac{\sqrt{a-a}}{\sqrt{a+a}(\sqrt{a}+\sqrt{a})}=\frac{\sqrt{0}}{\sqrt{2a}.(2\sqrt{a})}=\frac{0}{\text{qcoisa}}=0$$

$\text{qcoisa} \neq 0$

$\log_a(x)$ $\quad \log_e(x) = \ln(x)$

$e \approx 2{,}71\ldots$

$0<a\neq 1$

0 — 1 — $\boxed{2{,}71\ldots}$ e — a