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Universidad Técnica de Ambato

Nº
12

Facultad de Contabilidad y
Auditoría

Carrera de Economía

Calleja Juevora

2do Semestre

"A"

18/11/2024

Ejercicios

$\frac{0}{0}$

$$10 \lim_{x \rightarrow 1} \frac{x^2 - x}{2x^2 + 5x - 7}$$

$$\lim_{x \rightarrow 1} \frac{1^2 - 1}{2(1)^2 + 5(1) - 7}$$

$$\lim_{x \rightarrow 1} \frac{1-1}{7-7}$$

$$\lim_{x \rightarrow 1} \frac{0}{0} \text{ Indeterminacion}$$

$$\lim_{x \rightarrow 1} \frac{x^2 - x}{2x^2 + 5x - 7}$$

$$\lim_{x \rightarrow 1} \frac{x(x-1)}{(2x+7)(x-1)}$$

$$\lim_{x \rightarrow 1} \frac{x}{2x+7}$$

$$\lim_{x \rightarrow 1} \frac{1}{2(1)+7}$$

$$\lim_{x \rightarrow 1} \frac{1}{2+7}$$

$$\lim_{x \rightarrow 1} \frac{1}{9}$$

$$20 \lim_{k \rightarrow 4} \frac{k^2 - 16}{\sqrt{k} - 2}$$

$$\lim_{k \rightarrow 4} \frac{4^2 - 16}{\sqrt{4} - 2}$$

$$\lim_{k \rightarrow 4} \frac{16 - 16}{2 - 2}$$

$$\lim_{k \rightarrow 4} \frac{0}{0} \text{ Indeterminacion}$$

$$\lim_{k \rightarrow 4} \frac{k^2 - 16}{\sqrt{k} - 2}$$

$$\lim_{k \rightarrow 4} \frac{(k-4)(k+4)}{\sqrt{k} - 2}$$

$$\lim_{k \rightarrow 4} \frac{(\sqrt{k}-2)(\sqrt{k}+2)(k+4)}{(\sqrt{k}-2)}$$

$$\lim_{x \rightarrow 2} (\sqrt{x} - 2)(1x + 4)$$

$$\lim_{x \rightarrow 2} (\sqrt{x} - 2)(4 + 4)$$

$$\lim_{x \rightarrow 2} (2 - 2)(4 + 4)$$

$$\lim_{x \rightarrow 2} 8$$

$$\lim_{x \rightarrow 2} \frac{x^2 + 3}{x^2 - x - 12}$$

$$\lim_{x \rightarrow 2} \frac{(-3) + 3}{(-3)^2 - (-3) - 12}$$

$$\lim_{x \rightarrow 2} \frac{6}{9 + 3 - 12}$$

$$\lim_{x \rightarrow 2} \frac{x + 3}{(x - 4)(x + 3)}$$

$$\lim_{x \rightarrow 2} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow 2} \frac{x + 3}{(x - 4)(x + 3)}$$

$$\lim_{x \rightarrow 2} \frac{1}{x - 4}$$

$$\lim_{x \rightarrow 2} \frac{1}{(-3) - 4}$$

$$\lim_{x \rightarrow 2} \frac{1}{-7}$$

$$\lim_{x \rightarrow 2} -\frac{1}{7}$$

$$\lim_{x \rightarrow 2} \frac{2x^2 + 3x - 3}{3x^2 + 11x + 6}$$

$$\lim_{x \rightarrow 2} \frac{2(-3)^2 + 3(-3) - 3}{3(-3)^2 + 11(-3) + 6}$$

$$\lim_{x \rightarrow 2} \frac{18 - 15 - 3}{27 - 33 + 6}$$

$$\lim_{x \rightarrow 2-3} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow 2-3} \frac{2x^2 + 11x + 6}{2x^2 + 11x + 6}$$

$$\lim_{x \rightarrow 2-3} \frac{(x+3)(2x-1)}{(x+3)(2x-3)}$$

$$\lim_{x \rightarrow 2-3} \frac{2x-1}{2x-3}$$

$$\lim_{x \rightarrow 2-3} \frac{1(-3)-1}{2(-3)-3}$$

$$\lim_{x \rightarrow 2-3} \frac{-4-1}{-6-3}$$

$$\lim_{x \rightarrow 2-3} \frac{-5}{-9}$$

$$\lim_{x \rightarrow 2-3} \frac{5}{9}$$

$$\lim_{x \rightarrow 2-3} \frac{5}{9} \frac{\sqrt{x-1}-2}{x-5}$$

$$\lim_{x \rightarrow 2-3} \frac{\sqrt{x-1}-2}{x-5}$$

$$\lim_{x \rightarrow 2-3} \frac{0}{0}$$

$$\lim_{x \rightarrow 2-3} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow 2-3} \frac{\sqrt{x-1}-2}{x-5} \cdot \frac{\sqrt{x-1}+2}{\sqrt{x-1}+2}$$

$$\lim_{x \rightarrow 2-3} \frac{(\sqrt{x-1})^2 - 2^2}{(x-5)(\sqrt{x-1}+2)}$$

$$\lim_{x \rightarrow 2-3} \frac{(x-1)-4}{(x-5)(\sqrt{x-1}+2)}$$

$$\lim_{x \rightarrow 2-3} \frac{-3}{(x-5)(\sqrt{x-1}+2)}$$

$$\lim_{x \rightarrow 2-3} \frac{-3}{(x-5)(\sqrt{x-1}+2)} = \frac{1}{4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 4} \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x-4}$$

$$\lim_{x \rightarrow 0} (2x+1)$$

$$\lim_{x \rightarrow 0} 0$$

$$\lim_{x \rightarrow -3} \frac{x^2 + 8x + 15}{x^2 - x - 12}$$

$$\lim_{x \rightarrow -3} \frac{(-3)^2 + 8(-3) + 15}{(-3)^2 - (-3) - 12}$$

$$\lim_{x \rightarrow -3} \frac{9 - 24 + 15}{9 + 3 - 12}$$

$$\lim_{x \rightarrow -3} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow -3} \frac{x^2 + 8x + 15}{x^2 - x - 12}$$

$$\lim_{x \rightarrow -3} \frac{x^2 + 8x + 15}{(x+5)(x+3)}$$

$$\lim_{x \rightarrow -3} \frac{(x+5)(x+3)}{(x+5)(x+3)}$$

$$\lim_{x \rightarrow -3} \frac{x+3}{x+5}$$

$$\lim_{x \rightarrow -3} \frac{-3+5}{-3-4}$$

$$\lim_{x \rightarrow -3} -\frac{2}{7}$$

$$\lim_{x \rightarrow 2} \frac{3x^2 - 5x - 2}{x^2 - 4}$$

$$\lim_{x \rightarrow 2} \frac{3(2)^2 - 5(2) - 2}{(2)^2 - 4}$$

$$\frac{12 - 10 - 2}{0}$$

$$\lim_{x \rightarrow 2} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow 2} \frac{3x^2 - 5x - 2}{x^2 - 4}$$

$$\lim_{x \rightarrow 2}$$

$$\lim_{x \rightarrow 2} (3x-6)(3x+1) \rightarrow (x-2)$$

$$\lim_{x \rightarrow 2} \frac{(x-2)(3x+1)}{(x-2)(x+2)}$$

$$\lim_{x \rightarrow 2} \frac{3(x+1)}{x+2}$$

$$\lim_{x \rightarrow 2} \frac{6+1}{4}$$

$$\lim_{x \rightarrow 2} \frac{7}{4}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$x(x-2) \cdot \frac{1}{x-2} = x$$

$$\lim_{x \rightarrow 2} (x+1)(x-2)$$

$$\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3}$$

$$\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3} = \frac{0}{0}$$

$$\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3} = \frac{0}{0}$$

$$\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{2(2) + 1}{2^2 + 3}$$

$$\lim_{x \rightarrow 2} 5$$

$$13) \lim_{x \rightarrow -3} \frac{x^2 + 4x + 3}{x + 3}$$

$$\lim_{x \rightarrow -3} \frac{(-3)^2 + 4(-3) + 3}{(-3) + 3}$$

$$\lim_{x \rightarrow -3} \frac{9 - 12 + 3}{-3 + 3}$$

$$\lim_{x \rightarrow -3} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow -3} \frac{x^2 + 4x + 3}{(x+3)(x+1)}$$

$$\lim_{x \rightarrow -3} \frac{(x+3)(x+1)}{(x+3)}$$

$$\lim_{x \rightarrow -3} x + 1$$

$$\lim_{x \rightarrow -3} -3 + 1$$

$$\lim_{x \rightarrow -3} -2$$

$$14) \lim_{x \rightarrow 1} \frac{\sqrt[3]{x} - 1}{x - 1}$$

$$\lim_{x \rightarrow 1} \frac{\sqrt[3]{1} - 1}{1 - 1}$$

$$\lim_{x \rightarrow 1} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow 1} \frac{\sqrt[3]{x} - 1}{x - 1}$$

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

$$(\sqrt[3]{x} - 1)(\sqrt[3]{x^2} + \sqrt[3]{x} + 1)$$

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

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

$$\lim_{x \rightarrow -1} \frac{1}{1 + 1 + 1}$$

$$\lim_{x \rightarrow -1} \frac{1}{3}$$

$$15) \lim_{x \rightarrow -2} \frac{y^3 + 3y^2 + 2y}{y^2 - y - 6}$$

$$\lim_{x \rightarrow -2} \frac{(-2)^3 + 3(-2)^2 + 2(-2)}{(-2)^2 - (-2) - 6}$$

$$\lim_{x \rightarrow -2} \frac{-8 + 12 - 4}{4 + 2 - 6}$$

$$\lim_{x \rightarrow -2} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow -2} \frac{y^3 + 3y^2 + 2y}{y^2 - y - 6}$$

$$\lim_{x \rightarrow -2} \frac{y^3 + 3y^2 + 2y}{6x^2 + 6x + 6} = \frac{y(y^2 + 3y + 2)}{6(x-x_1)(x-x_2)}$$

$$y^2 - y - 6 = (y-3)(y+2)$$

$$\lim_{x \rightarrow -2} \frac{y(y+1)(y+2)}{(y-3)(y+2)}$$

$$\lim_{x \rightarrow -2} \frac{y(y+1)}{y-3}$$

$$\lim_{x \rightarrow -2} \frac{-2(-2+1)}{-2-3}$$

$$\lim_{x \rightarrow -2} \frac{-2(-1)}{-5}$$

$$\lim_{x \rightarrow -2} -\frac{2}{5}$$

$$16) \lim_{x \rightarrow 0} \frac{x^3 - 4x^4}{2x^3 - 4x^2}$$

$$\lim_{x \rightarrow 0} \frac{(0)^3 - 4(0)^4}{2(0)^3 - 4(0)^2}$$

$$\lim_{x \rightarrow 0} \frac{0-0}{0-0}$$

$$\lim_{x \rightarrow 0} \frac{0}{0}$$

Indeterminado

Indeterminado

$$\lim_{x \rightarrow 0} \frac{x^2 - 4x^4}{2x^2 - 4x^2}$$

$$\frac{x^2 - 4x^4}{2x^2 - 4x^2}$$

$$\lim_{x \rightarrow 0} \frac{x^4(x-4)}{x^2(2x-4)}$$

$$\frac{x^4(x-4)}{x^2(2x-4)}$$

$$\lim_{x \rightarrow 0} \frac{x^2(x-4)}{2x-4}$$

$$\frac{x^2(x-4)}{2x-4}$$

$$\lim_{x \rightarrow 0} \frac{x^3(0-4)}{2(0)-4}$$

$$\frac{x^3(0-4)}{2(0)-4}$$

$$\lim_{x \rightarrow 0} \frac{0}{-4}$$

$$\frac{0}{-4}$$

$$\lim_{x \rightarrow 0} \frac{0}{0}$$

$$0$$

$$(17) \lim_{x \rightarrow 0} \frac{x^2}{\sqrt{1+x} - 1}$$

$$\frac{x^2}{\sqrt{1+x} - 1}$$

$$\lim_{x \rightarrow 0} \frac{0^2}{\sqrt{1+0} - 1}$$

$$\frac{0^2}{\sqrt{1+0} - 1}$$

$$\lim_{x \rightarrow 0} \frac{0}{\sqrt{1} - 1}$$

$$\frac{0}{\sqrt{1} - 1}$$

$$\lim_{x \rightarrow 0} \frac{0}{0}$$

Indeterminado

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

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

$$\lim_{x \rightarrow 0} \frac{x^2 \cdot (\sqrt{1+x} + 1)}{(\sqrt{1} + x)^2 - 1^2}$$

$$\frac{x^2 \cdot (\sqrt{1+x} + 1)}{(\sqrt{1} + x)^2 - 1^2}$$

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

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

$$\lim_{x \rightarrow 0} \frac{x^2(\sqrt{1+x} + 1)}{x}$$

$$\frac{x^2(\sqrt{1+x} + 1)}{x}$$

$$\lim_{x \rightarrow 0} \frac{x \cdot (\sqrt{1+x} + 1)}{0 \cdot (1+1)}$$

$$\frac{x \cdot (\sqrt{1+x} + 1)}{0 \cdot (1+1)}$$

$$\lim_{x \rightarrow 0} \frac{0}{0}$$

$$0 \cdot (1+1)$$

$$\lim_{x \rightarrow 0} \frac{0}{0}$$

$$0$$

$$18) \lim_{x \rightarrow -3} \frac{x^2 + 8x + 15}{x^2 - x - 12}$$

$$\lim_{x \rightarrow -3} \frac{(-3)^2 + 8(-3) + 15}{(-3)^2 - (-3) - 12}$$

$$\lim_{x \rightarrow -3} \frac{9 - 24 + 15}{9 + 3 - 12}$$

$$\lim_{x \rightarrow -3} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow -3} \frac{x^2 + 8x + 15}{x^2 - x - 12}$$

$$\lim_{x \rightarrow -3} \frac{x^2 + 8x + 15}{(x+5)(x+3)}$$

$$\frac{x^2 - 1x - 12}{(x-4)(x+3)}$$

$$\lim_{x \rightarrow -3} \frac{(x+5)(x+3)}{(x-4)(x+3)}$$

$$\lim_{x \rightarrow -3} \frac{x+5}{x-4}$$

$$\lim_{x \rightarrow -3} \frac{-3+5}{-3-4}$$

$$\lim_{x \rightarrow -3} \frac{2}{-7}$$

$$19) \lim_{x \rightarrow 2} \frac{3x^2 - 5x - 2}{x^2 - 4}$$

$$\lim_{x \rightarrow 2} \frac{3(2)^2 - 5(2) - 2}{(2)^2 - 4} = \frac{-2}{0}$$

$$\lim_{x \rightarrow 2} \frac{3(4) - 5(2) - 2}{4 - 4} = \frac{-2}{0}$$

$$\lim_{x \rightarrow 2} \frac{12 - 10 - 2}{0} = \frac{0}{0}$$

$$\lim_{x \rightarrow 2} \frac{0}{0} \quad \text{Indeterminado}$$

$$\lim_{x \rightarrow 2} \frac{3x^2 - 5x - 2}{x^2 - 4}$$

$$3x^2 - 5x - 2 = (3x - 6)(3x + 4) - (x - 2)(3x + 1)$$

$$\lim_{x \rightarrow 2} \frac{(x+2)(3x+1)}{(x+2)(3x+1)}$$

$$\lim_{x \rightarrow 2} \frac{3(2) + 1}{2 + 2} = \frac{7}{4}$$

$$\lim_{x \rightarrow 2} \frac{6 + 1}{4} = \frac{7}{4}$$

$$\lim_{x \rightarrow 2} \frac{7}{4} = \frac{7}{4}$$

$$20) \lim_{x \rightarrow \frac{2}{3}} \frac{9x^2 - 4}{3x - 2}$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{9(\frac{2}{3})^2 - 4}{3(\frac{2}{3}) - 2} = \frac{-4}{0}$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{9(4/9) - 4}{2 - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{4 - 4}{2 - 2} = \frac{0}{0}$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{0}{0}$$

Indeterminado

$$\lim_{x \rightarrow \frac{2}{3}} \frac{1}{3}$$

$$9x^2 - 4$$

$$3x - 2$$

$$9x^2 - 4 = (3x - 2)(3x + 2)$$

$$3x - 2$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{1}{3}$$

$$(3x - 2)(3x + 2)$$

$$3x - 2$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{1}{3}$$

$$(3x - 2)(3x + 2)$$

$$3x - 2$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{1}{3}$$

$$(3x + 2)$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{1}{3}$$

$$3 \left(\frac{2}{3} \right) + 2$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{1}{3}$$

$$2 + 2$$

$$\lim_{x \rightarrow \frac{2}{3}} \frac{1}{3}$$

$$4 //$$

21)

$$\lim_{x \rightarrow -3} \frac{1}{3}$$

$$x^2 + 4x + 3$$

$$x \rightarrow -3$$

$$x + 3$$

$$\lim_{x \rightarrow -3} \frac{1}{3}$$

$$(x + 3)^2 + 4(x + 3) + 3$$

$$x \rightarrow -3$$

$$(x + 3) + 3$$

$$\lim_{x \rightarrow -3} \frac{1}{3}$$

$$9 - 12 + 3$$

$$x \rightarrow -3$$

$$-3 + 3$$

$$\lim_{x \rightarrow -3} \frac{1}{3}$$

$$0$$

Indeterminado

22)

$$\lim_{x \rightarrow -3} \frac{1}{3}$$

$$x^3 - 6x^2 + 9x$$

$$x - 3$$

$$x^2 - 9$$

$$\lim_{x \rightarrow -3} \frac{1}{3}$$

$$(x + 3)^3 - 6(x + 3)^2 + 9(x + 3)$$

$$x - 3$$

$$(x + 3)^2 - 9$$

$$\lim_{x \rightarrow -3} \frac{1}{3}$$

$$27 - 6(9) + 27$$

$$x - 3$$

$$9 - 9$$

$$\lim_{x \rightarrow -3} \frac{1}{3}$$

$$27 - 54 + 27$$

$$x - 3$$

$$0$$

$$\lim_{x \rightarrow -3} \frac{1}{3}$$

$$0 //$$

Indeterminado

$$\lim_{x \rightarrow 3}$$

$$x^3 - 6x^2 + 9x$$

$$x^2 - 9$$

$$(N) \quad x^3 - 6x^2 + 9x$$

$$x(x-3)^2$$

$$= x(x^2 - 6x + 9)$$

$$\downarrow$$

$$x \quad 2(x)(3)$$

$$(D) \quad (x+3)(x-3)$$

$$\lim_{x \rightarrow 3}$$

$$3(3-3)$$

$$3+3$$

$$\lim_{x \rightarrow 3}$$

$$3(0)$$

$$6$$

$$\lim_{x \rightarrow 3}$$

$$0$$

$$6$$

$$\lim_{x \rightarrow 3}$$

$$0 //$$

(23)

$$\lim_{x \rightarrow 2}$$

$$2x^2 - 3x - 2$$

$$x^3 - 2x^2 - 3x + 6$$

$$\lim_{x \rightarrow 2}$$

$$2(2)^2 - 3(2) - 2$$

$$(2)(3) - 2(2)^2 - 3(2) + 6$$

$$\lim_{x \rightarrow 2}$$

$$2(4) - 6 - 2$$

$$8 - 4 - 6 + 6$$

$$\lim_{x \rightarrow 2}$$

$$8 - 6 - 2$$

$$8 - 4 - 6 + 6$$

$$\lim_{x \rightarrow 2}$$

$$\frac{0}{0}$$

Indeterminado.

$$\lim_{x \rightarrow 2}$$

$$2x^2 - 3x - 2$$

$$x^3 - 2x^2 - 3x + 6$$

$$\lim_{x \rightarrow 2}$$

$$(N) \quad (2x-4)(2x+1)$$

$$2$$

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

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

(D)

$$x^3 - 2x^2 - 3x + 6$$

$$(x^3 - 2x^2) - (3x - 6)$$

$$x^2(x-2) - 3(x-2)$$

$$(x-2)(x^2-3)$$

$$\lim_{x \rightarrow 2}$$

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

$$(x-2)(2x^2-3)$$

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

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

$$\lim_{x \rightarrow 2} \frac{5}{1/}$$

24) $\lim_{x \rightarrow 5} \frac{(x+3)^2-9}{x}$

$$\lim_{x \rightarrow 6} \frac{(0+3)^2-9}{0}$$

$$\lim_{x \rightarrow 0} \frac{(3)^2-9}{0}$$

$$\lim_{x \rightarrow 0} \frac{9-9}{0}$$

$$\lim_{x \rightarrow 0} \frac{0}{0}$$

Indeterminado

$$\lim_{x \rightarrow 0} \frac{(x+3)^2-9}{x}$$

$$\lim_{x \rightarrow 0} \frac{x^2+6x+9-9}{x}$$

$$\lim_{x \rightarrow 0} \frac{x^2+6x}{x}$$

$$\lim_{x \rightarrow 0} \frac{x(x+6)}{x}$$

$$\lim_{x \rightarrow 0} (x+6)$$

$$\lim_{x \rightarrow 0} 0+6$$

$$\lim_{x \rightarrow 0} 6 //$$

25)

$$\lim_{x \rightarrow 6} \frac{(x+2)^3 - 8}{x}$$

$$(x+2)^3 - 8$$

$$\lim_{x \rightarrow 0} \frac{(2)^3 - 8}{0}$$

$$(2)^3 - 8$$

$$\lim_{x \rightarrow 0} \frac{8 - 8}{0}$$

$$0 - 8$$

$$\lim_{x \rightarrow 0} \frac{0}{0}$$

$$0 - 8$$

$$\lim_{x \rightarrow 0} \frac{0}{0}$$

$$\frac{0}{0}$$

Indefinición

$$\lim_{x \rightarrow 0} \frac{(x+2)^3 - 8}{x}$$

$$(x+2)^3 - 8$$

$$\lim_{x \rightarrow 0} (a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$x^3 + 6x^2 + 12x + 8 - 8$$

$$x$$

$$\lim_{x \rightarrow 0} \frac{x^3 + 6x^2 + 12x}{x}$$

$$x^3 + 6x^2 + 12x$$

$$\lim_{x \rightarrow 0} \frac{x^3 + 6x^2 + 12x}{x}$$

$$x^3 + 6x^2 + 12x$$

$$\lim_{x \rightarrow 0} (x^2 + 6x + 12)$$

$$x^2 + 6x + 12$$

$$\lim_{x \rightarrow 0} (0^2 + 6(0) + 12)$$

$$0^2 + 6(0) + 12$$

$$\lim_{x \rightarrow 0} 12 //$$

$$12 //$$

$$26) \lim_{x \rightarrow -3} \frac{x^2 + 4x + 3}{x + 3}$$

$$\lim_{x \rightarrow -3} \frac{(-3)^2 + 4(-3) + 3}{-3 + 3}$$

$$\lim_{x \rightarrow -3} \frac{9 - 12 + 3}{-3 + 3}$$

$$\lim_{x \rightarrow -3} \frac{0}{0} \quad \text{Indeterminación}$$

$$x^2 + 4x + 3: \frac{(x+3)(x+1)}{(x+3)}$$

$$\lim_{x \rightarrow -3} -3 + 1$$

$$\lim_{x \rightarrow -3} -2$$

$$27) \lim_{x \rightarrow 1} \frac{\sqrt{x} - 1}{x - 1}$$

$$\lim_{x \rightarrow 1} \frac{\sqrt{1} - 1}{1 - 1}$$

$$\lim_{x \rightarrow 1} \frac{0}{0} \quad \text{Indeterminación}$$

$$\frac{(\sqrt{x} - 1)}{(x - 1)} \cdot \frac{(\sqrt{x} + 1)}{(\sqrt{x} + 1)}$$

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

$$\frac{(x - 1)}{(x - 1)(\sqrt{x} + 1)}$$

$$\frac{1}{\sqrt{x} + 1}$$

$$\lim_{x \rightarrow 1} \frac{1}{\sqrt{x} + 1}$$

$$\lim_{x \rightarrow 1} \frac{1}{\sqrt{1} + 1}$$

$$\lim_{x \rightarrow 1} \frac{1}{1 + 1}$$

$$\Rightarrow \lim_{x \rightarrow 1} \frac{1}{2}$$

$$28) \lim_{x \rightarrow 1} \frac{x^2 - 2x + 1}{x^2 - 1}$$

$$\lim_{x \rightarrow 1} \frac{1^2 - 2(1) + 1}{(1)^2 - 1}$$

$$\lim_{x \rightarrow 1} \frac{1 - 2 + 1}{1 - 1}$$

$$\lim_{x \rightarrow 1} \frac{0}{0} \text{ Indeterminación}$$

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

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

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

$$\lim_{x \rightarrow 1} \frac{(x-1)}{(x+1)}$$

$$\lim_{x \rightarrow 1} \frac{1-1}{1+1}$$

$$\lim_{x \rightarrow 1} \frac{0}{2}$$

$$\lim_{x \rightarrow 1} 0$$

$$29) \lim_{x \rightarrow 5} \frac{x^2 - 7x + 10}{x^2 - 25}$$

$$\lim_{x \rightarrow 5} \frac{5^2 - 7(5) + 10}{5^2 - 25}$$

$$\lim_{x \rightarrow 5} \frac{25 - 35 + 10}{25 - 25}$$

$$\lim_{x \rightarrow 5} \frac{0}{0} \text{ Indeterminación}$$

$$x^2 - 7x + 10 = x^2 - 2x + 5x + 10$$

$$x(x-2) - 5(x-2)$$

$$(x-2)(x-5)$$

$$x^2 - 25 = x^2 - 5^2$$

$$(x-5)(x+5)$$

$$\frac{(x-2)(x-5)}{(x-5)(x+5)}$$

$$\lim_{x \rightarrow 5} \frac{x-2}{x+3}$$

$$\lim_{x \rightarrow 5} \frac{5-2}{5+3}$$

$$\lim_{x \rightarrow 5} \frac{3}{10}$$

$$30) \lim_{x \rightarrow 1} \frac{\sqrt{x}-1}{x-1}$$

$$\lim_{x \rightarrow 1} \frac{\sqrt{x}-1}{1-1}$$

$$\lim_{x \rightarrow 1} \frac{0}{0} \text{ Indeterminación}$$

$$\frac{\sqrt{x}-1}{x-1} = \frac{\cancel{\sqrt{x}-1}}{(\sqrt{x}+1)(\sqrt{x}-1)}$$

$$\lim_{x \rightarrow 1} \frac{1}{\sqrt{x}+1}$$

$$\lim_{x \rightarrow 1} \frac{1}{1+1}$$

$$\lim_{x \rightarrow 1} \frac{1}{2}$$

$$31) \lim_{x \rightarrow -2} \frac{x^2+2x}{x^2-x-6}$$

$$\lim_{x \rightarrow -2} \frac{(-2)^2+2(-2)}{(-2)^2-(-2)-6}$$

$$\lim_{x \rightarrow -2} \frac{4-4}{4+2-6}$$

$$\lim_{x \rightarrow -2} \frac{0}{0} \text{ Indeterminado}$$

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

$$x^2-6+6 = (x+2)(x-3)$$

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

$$\lim_{x \rightarrow 2} x$$

$$x=3$$

$$\lim_{x \rightarrow -2} -2$$

$$-2-3$$

$$\lim_{x \rightarrow -2} 7^2$$

$$7^3$$

$$\lim_{x \rightarrow -2} \frac{2}{5}$$

$$32) \lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2}$$

$$\lim_{x \rightarrow 2} \frac{(2)^2 - 4}{(2) - 2}$$

$$\lim_{x \rightarrow 2} \frac{4 - 4}{2 - 2}$$

$$\lim_{x \rightarrow 2} \frac{0}{0} \text{ Indeterminación}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{(x+2)(x-2)}{\cancel{x-2}}$$

$$\lim_{x \rightarrow 2} x + 2$$

$$\lim_{x \rightarrow 2} 2 + 2$$

$$\lim_{x \rightarrow 2} 4$$

$$33) \lim_{x \rightarrow 3} \frac{x^2 + 4x + 3}{x + 3}$$

$$\lim_{x \rightarrow -3} \frac{(-3)^2 - 4(-3) + 3}{-3 + 3}$$

$$\lim_{x \rightarrow -3} \frac{9 - 12 + 3}{-3 + 3}$$

$$\lim_{x \rightarrow -3} \frac{0}{0} \text{ Indeterminado}$$

$$\lim_{x \rightarrow 3} x^2 + 4x + 3$$

$$\lim_{x \rightarrow 3} (x+3)(x+1)$$

$$(x+3)$$

$$\lim_{x \rightarrow 3} -3 + 1$$

$$\lim_{x \rightarrow 3} -2$$

$$34) \lim_{x \rightarrow 2} x^3 - x^2 - 4x + 4$$

$$\lim_{x \rightarrow 2} 2^3 - 2^2 - 4(2) + 4$$

$$2^2 - 2 - 2$$

$$\lim_{x \rightarrow 2} 8 - 4 - 8 + 4$$

$$4 - 2 - 2$$

$$\lim_{x \rightarrow 2} \frac{0}{0} \text{ Indeterminación}$$

$$\lim_{x \rightarrow 2} (x-2)(x^2 + x - 2)$$

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

$$\lim_{x \rightarrow 2} x^2 + x - 2$$

$$x + 1$$

$$\lim_{x \rightarrow 2} 2^2 + 2 - 2$$

$$2 + 1$$

$$\lim_{x \rightarrow 2} \frac{4}{3}$$

$$35) \lim_{x \rightarrow 4} x - 4$$

$$\sqrt{x} - 2$$

$$\lim_{x \rightarrow 4} 4 - 4$$

$$\sqrt{4} - 2$$

$$\lim_{x \rightarrow 4} 0$$

$$2 - 2$$

$$\lim_{x \rightarrow 4} \frac{0}{0} \text{ Indeterminación}$$

$$\lim_{x \rightarrow 4} \sqrt{x} - 4 \cdot \frac{\sqrt{x} + 2}{\sqrt{x} + 2}$$

$$\sqrt{x} + 2$$

$$\lim_{x \rightarrow 4} (x-4) (\sqrt{x} + 2)$$

$$\lim_{x \rightarrow 4} \sqrt{x} + 2$$

$$\lim_{x \rightarrow 4} \sqrt{4} + 2$$

$$\lim_{x \rightarrow 4} 2 + 2$$

$$\lim_{x \rightarrow 4} 4$$