UNIVERSIDAD AUTÓNOMA DEL ESTADO DE MÉXICO

PREPARATORIA REGIONAL TEJUPILCO A.C

MATERIA

Cálculo Diferencial

DOCENTE:

Lic. Alfonso Jaramillo Avilés

TRABAJO:

Proyecto

Quinto Semestre Grupo 1

PRESENTAN:

Equipo 5

Orozco Benítez Octavio Roberto

Domínguez Barrueta Karla

Campuzano Morales Jesús Aldhair

Sánchez Molina Cecilia

Rodríguez López Yair

Rodríguez Jaramillo Matías

$1 = 1 \lim_{x \to 0}$

$x-1$	0	$x+$
-2	0	1

$-0.2 = -560$ $0.2 = 560$

$-0.02 = -5600$ $0.02 = 5600$

$-0.002 = -56000$ $0.02 = 56000$

2= $\lim_{x \to 2}$ (x) 5-2x para x(-1)

2x para x>-1

-2 0 2 1 4

-2.9 2.9 3.1

-1.99

-1.999 -1.1=7.0 0

-0.9=-1.8

-2.01=7.02 -0.99=-1.98

-2 -2 -2.002=7.002 -0.999=-1.998

-2.9

-2.99

-2.999

3= $\lim_{x \to 0}$ x^2 para x<0

$0.5x^2$ para x>0

$\frac{1}{1000}$

-0.2=0.02=0.0005

-0.02=0.000020.01

-0.002=0.0000020.002

1000√10000 = .0001

10 000000√10 0000 = .000001

20000√100000 = .00005

-0.2=0.02 0.1=0.005

-0.01=0.0001 0.01=0.00005

-0.001=0.000001 0.001=0.000005

4- $\lim_{x \to 8} \frac{x^2 - 64}{x - 8} = \frac{(8)^2 - 64}{(8) - 8} = \frac{64 - 64}{8 - 8} = \frac{0}{0} = \text{ind}$

5- $\lim_{x \to 3} \frac{9 - x^2}{3 - x} = \frac{9 - (3)^2}{3 - (3)} = \frac{9 - 9}{3 - 3} = \frac{0}{0} = \text{ind}$

6- $\lim_{x \to 2} \frac{3x^2 - 9x - 12}{3x + 3} = \frac{3(-1)^2 - 9(-2) - 12}{3(-1) + 3} = \frac{0}{0} = \text{ind}$

7- $\lim_{x \to 1/2} \frac{1 - x - 2x^2}{1 - 2x}$ $\quad \frac{2x^2 + x - 1}{2x - 1} = \frac{0}{0} = \frac{2x^2 + x - 1}{} =$

$\frac{(2x+1)}{1} \frac{(2x-1)}{1} = \frac{(2x+1)(2x-1)}{2x-1} = (2x-1) = (2(-1/2)+1) = 0$

8- $\lim_{x \to 7} \frac{x^2 - 49}{x + 7} = \frac{(-7)^2 - 49}{-7 + 7} = \frac{49 - 49}{-7 + 7} = \frac{0}{0} = \text{ind}$

$\frac{x^2 - 49}{x + 7} = \frac{(x-7)(x+7)}{x+7} = (x - 7) = -7 - 7 = -14$

$x^2 - 49 = (x - 7)(x + 7)$

9 ō $\lim_{x \to -5} \frac{x^2+3x-10}{x+5} = \frac{(-5)^2+3(-5)-10}{-5+5} = \frac{0}{0}$

$\frac{x^2+3x-10}{x+5} = \frac{(x+5)(x-2)}{x+5} = (x-2) = (-5)-2 = \underline{-7}$

$x^2+3x-10 = (x+5)(x-2)$

10 ō $\lim_{x \to 3} \frac{x^2+3x-18}{x-3} = \frac{(3)^2+3(3)-18}{3-3} = \frac{9+9-18}{0} = \frac{0}{0}$

11 ō $\lim_{x \to -3} \frac{x^2+3x}{x+3} = \frac{(-3)^2+3(-3)}{3-3} = \frac{9+(-9)}{0} = \frac{0}{0}$

12 ō $\lim_{x \to -5} \frac{2x^2+7x-15}{x+5} = \frac{2(-5)^2+7(-5)-15}{-5+5}$

$\frac{2(25)-35-15}{0} = \frac{50-50}{0} = \frac{0}{0}$

$\frac{2x^2+7x-15}{x+5} \quad \frac{2x^2+7x-30}{x+5} = \frac{(2x+10)}{2} \frac{(2x-3)}{1}$

$(x+5) \quad (2x-3)$

$\frac{(x+5)(2x-3)}{x+5} = 2x-3 = 2(-5)-3 = -10-3 = -13$

13. $\lim_{x \to 2} \dfrac{3-\sqrt{4x+1}}{x^2-2x} = \dfrac{3-\sqrt{4(2)+1}}{(2)^2-2(2)}$

$\dfrac{3-\sqrt{8+1}}{4-4} = \dfrac{3-\sqrt{9}}{0} = \dfrac{3-3}{0} = \dfrac{0}{0}$

14. $\lim_{x \to 0} \dfrac{\sqrt{x+4}-2}{x} = \dfrac{\sqrt{0+4}-2}{0} = \dfrac{\sqrt{4}-2}{0} = \dfrac{2-2}{0} = \dfrac{0}{0}$

$\dfrac{\sqrt{x+4}-2}{\cancel{x}} \cdot \dfrac{\sqrt{x+4}+2}{\sqrt{x+4}} \quad \dfrac{x+4-4}{x(\sqrt{x+4}+2)} = \dfrac{x}{x(\sqrt{x+4}+2}$

$\dfrac{1}{\sqrt{x+4}+2} \quad \dfrac{1}{\sqrt{0+4}+2} = \dfrac{1}{\sqrt{4}+2} = \dfrac{1}{2+2} = \dfrac{1}{4}$

15.- $\lim_{x \to 2} \dfrac{x^2 - 4x + 4}{7 sen^2 (x-2)} =$

$\dfrac{(2)^2 - 4(2) + 4}{7 sen^2 (2-2)} = \dfrac{4 - 8 + 4}{7 sen (x-2)\, sen (x-2)} = \dfrac{0}{7(0)(0)} = \dfrac{0}{0} = \infty$

$(2-2) \quad (2-2)$

$0 \quad 0$

Escaneado con CamScanner

16.- $\lim_{x \to -3} \dfrac{(x+3)^2 \cos(x+3)}{x^2+6x+9} =$

$= \dfrac{(x+3)\,(x+3)\cos(x+3)}{(x+3)\qquad(x+3)}$

$\cos(x+3) = \cos(-3+3) = \cos = \underline{1}$ //

17.- $\lim_{x \to -2} \dfrac{x-2}{(7x-14)\cos(x-2)} =$

$= \dfrac{x-2}{(7x-14)\cos(x-2)} = 1$

$(7x-14)(1) = \underline{0}$ //

18.- $\lim_{x \to 1/2} \dfrac{4x^2+6x-4}{\tan(2x-1)} =$

$= \dfrac{(2x+4)(2x-1)}{\tan(2x-1)} = (2x+4)(1) = \underline{5}$ //

$4x^2+6x-16 = \dfrac{(4x+8)}{2}\dfrac{(4x-2)}{2}$

$(2x+4)(2x-1)$

1.- $\lim_{x \to \infty} \dfrac{4x^3 - 2x^2 + 4x + 2}{2x^3 - 1} = \dfrac{4}{2} = 2$

2.- $\lim_{x \to \infty} \dfrac{2 - 3x^4}{4 - 6x^7} = 0$

3.- $\lim_{x \to \infty} \dfrac{2x^5 + 5x^4 + 7x}{3x^2 + 6x - 1} =$

$= \lim_{x \to \infty} = \dfrac{\dfrac{2\cancel{x^5}}{\cancel{x^5}} + \dfrac{5x^4}{x^5} - \dfrac{7x}{x^5}}{\dfrac{3x^2}{x^5} + \dfrac{6x}{x^5} - \dfrac{1}{x^5}}$

$= \lim_{x \to \infty} \dfrac{2 + \cancel{\dfrac{5}{x}} \to 0 + \cancel{\dfrac{7x}{x^5}} \to 0}{\dfrac{3}{x^3} + \dfrac{6k}{x^5} - \dfrac{1}{x^5}} = \dfrac{0}{0} = \infty$

4.- $\lim_{x \to \infty} \dfrac{2x^4 + 2x^3 + 4}{8x^4 - 7x} =$

$= \lim_{x \to \infty} \dfrac{\dfrac{2\cancel{x^4}}{\cancel{x^4}} + \dfrac{2x^3}{x^4} + \dfrac{4}{x^4}}{\dfrac{8\cancel{x^4}}{\cancel{x^4}} - \dfrac{7x}{x^4}} =$

$= \lim_{x \to \infty} \dfrac{2 + \cancel{\dfrac{2}{x}} \to 0 + \cancel{\dfrac{4}{x^4}} \to 0}{8 - \cancel{\dfrac{7x}{x^4}}} = \dfrac{2}{8} = \dfrac{1}{4}$

Escaneado con CamScanner

$$5.-\lim_{x\to\infty}\frac{2x-6x^5}{7x^3-8x^5}=$$

$$=\lim_{x\to\infty}\frac{\frac{2x}{x^5}-\frac{6\cancel{x^5}}{\cancel{x^5}}}{\frac{7x^3}{x^5}-\frac{8\cancel{x^5}}{\cancel{x^5}}}$$

$$=\lim_{x\to\infty}\frac{\frac{2x}{x^5}-6}{\frac{7}{x^5}-8}=\frac{6}{8}=\frac{3}{4}$$

$$6.-\lim_{x\to\infty}\frac{6x-1}{x+10}=$$

$$=\lim_{x\to\infty}\frac{\frac{6\cancel{x}}{\cancel{x}}\ \frac{-1}{x}}{\frac{x}{x}+\frac{10}{x}}=$$

$$=\lim_{x\to\infty}\frac{6-\frac{1}{x}}{\frac{x}{x}+\frac{10}{x}}=\frac{6}{0}=\infty$$

$$7-\lim_{x\to\infty}\frac{5-5x}{x+5}=$$

$$=\lim_{x\to\infty}\frac{\frac{\cancel{5}}{\cancel{x}}-\frac{5x}{x}}{\frac{x}{x}+\frac{5}{x}}=$$

$$=\lim_{x\to\infty}\frac{\cancel{\frac{5}{x}}-5}{\frac{x}{x}+\frac{5}{x}}=\frac{5}{0}=\infty$$

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

9.- $\lim_{x \to \infty} \frac{10x^2+12x-13}{20x^2+2x+10} =$

$(10x^2+12x-13)$

$(20x^2+2x-10)$

$\left(\frac{10x^2+12x-13}{20x^2+2x+10}\right) =$

$\left(\frac{10+12x-13x^2}{20+2x+10x^2}\right) =$

$\frac{10+12\times 0-13\times 0}{20+2\times 0+10\times 0} = \frac{1}{2}$

10.- $\lim_{x \to \infty} \frac{90x^3-40x}{20-30x^3} =$

$(90x^3-40x)$

$(2-30x^3)$

$\left(\frac{90x^3-40x}{2-30x^3}\right)$

$\left(\frac{x^3 x(90-40x^2)}{x^3 x(1-30x^3}\right)$

$\frac{90-40\times 0}{0-30} = -3$

11.- $\lim_{x \to \infty} \frac{4x+12}{\sqrt{x^2-10}} =$

$(4x+12)$

$(\sqrt{x^2-10})$

$\left(\frac{4x+12}{\sqrt{x^2-10}}\right)$

$\left(\frac{x(4+\frac{12}{x})}{x\sqrt{1-\frac{10}{x^2}}}\right)$

$\frac{4x+12\times 0}{\sqrt{1-10x}} = 4$

Escaneado con CamScanner

12 - $\lim_{x \to \infty} \left(\sqrt{9x^2+1-3x} \right)$

$(9x^2+1-3x)$

$(9x^2-3x+1)$

Lim es igual a $= \underline{\infty}$ //