Poniendo limites

Biomatemáticas

Dionicio Moreno Suchiapa

2° semestre Grupo: C

Rosvani Margine Morales Irecta

Un limite es una magnitud a la que se acercan progresivamente los términos de una secuencia infinita de magnitudes, es decir expresa la tendencia de una función o de una sucesión

Formula

$$f(x) = L \quad x \to a$$

$$\lim_{x \to 2} x^2 = (2)^2 = 4$$

Ejercicios

$$\lim_{x \to 2.5} x^2 = 6.5$$

$$\lim_{x \to 1.5} x^2 = 2.25$$

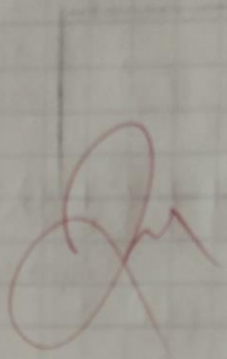
$$\lim_{x \to 3} x^2 = 9$$

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

$\lim_{Ph(x) \to 7.2} x^2 \quad (7.2)^2 = 51.84$

$\lim_{Ph(x) \to 7.4} x^2 \quad (7.4)^2 = 54.76$

$\lim_{Ph(x) \to 7.6} x^2 \quad (7.6)^2 = 57.76$



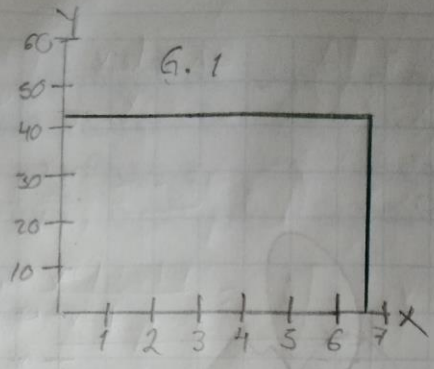
Tarea

① $\lim_{Ph(x) \to 6.6} x^2 = (6.6)^2 = 43.56$

② $\lim_{Ph(x) \to 7.6} x^3 = (7.6)^3 = 438.976$

③ $\lim_{Ph(x) \to 7.8} x^3 = (7.8)^3 = 474.552$

④ $\lim_{Ph(x) \to 8} x^4 = (8)^4 = 4.096$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10
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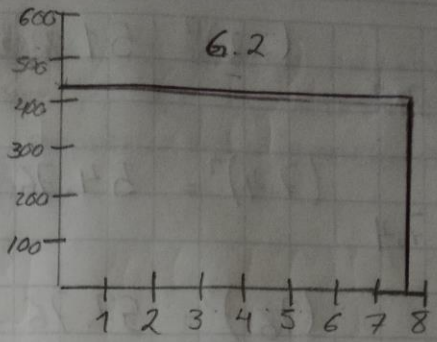
X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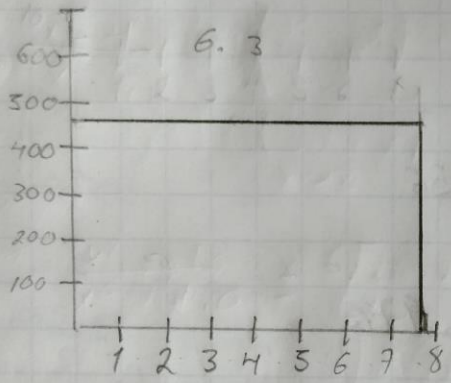
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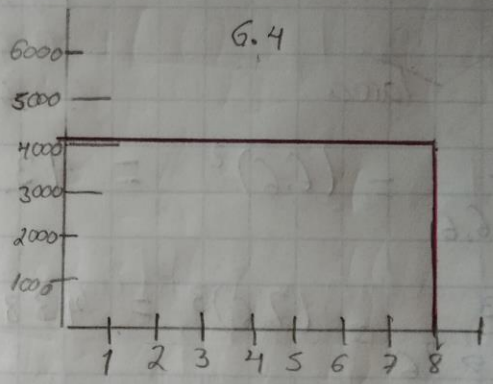
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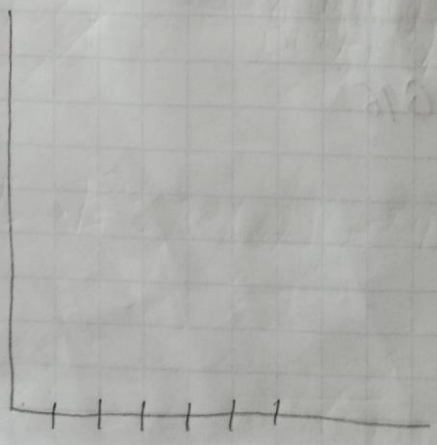


11/02/22

Máximo Común Divisor

4096	2
2,048	2
1,024	2
512	2
256	2
128	2
64	2
32	2
16	2
8	2
4	2
2	2 = 2
1	

= 24

438 927 → 439 | 2

474	2
237	3
79	79
1	

474.552

474	2
237	3
79	79
1	

16	20	24	2
8	10	12	2
4	5	6	

→ 4

3

18,	27	3
6	9	3
2	3	

→ 9

10	15	5
2	3	1

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

Tarea

$$\lim_{x\to 2} \frac{x^2+x-6}{x-2} = \frac{-6\left[\lim_{x\to 2} x^2+x\right]}{-2\left[\lim_{x\to 2} x\right]} = \frac{-6[(2)^2+(2)]}{-2[2]} = \frac{-6[(4)+(2)]}{-2(2)}$$

$$= \frac{-6[6]}{-2(2)} = \frac{-36}{-4} = 9$$

$$\lim_{x\to 2} \frac{x^2+5x+4}{x^2+3x-4} = \frac{4\left[\lim_{x\to 2} x^2+5x\right]}{-4\left[\lim_{x\to 2} x^2+3x\right]} = \frac{4[(2)^2+5(2)]}{-4[(2)^2+3(2)]} = \frac{4[4+10]}{-4[4+6]}$$

$$= \frac{4[14]}{-4[10]} = \frac{56}{-40} = -1.4$$

$$\lim_{x\to 2} \frac{x^2-4}{x-2} = \frac{-4\left(\lim_{x\to 2} x^2\right)}{-2\left(\lim_{x\to 2} x\right)} = \frac{-4[(2)^2]}{-2[(2)]} = \frac{-4[4]}{-2(2)}$$

$$= \frac{-16}{-4} = 4$$

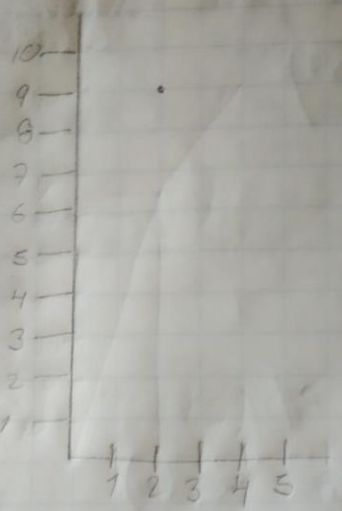
$$\lim_{x\to 2} \frac{x^2-5x+6}{x^2-12x+20} = \frac{6\left[\lim_{x\to 2} x^2-5x\right]}{20\left[\lim_{x\to 2} x^2-12x\right]} = \frac{6[(2)^2-5(2)]}{20[(2)^2-12(2)]} = \frac{6[(4)-10]}{20[(4)-24]}$$

$$= \frac{6[-6]}{20(-20)} = \frac{-36}{-40} = 1.1$$

$$\lim_{x\to 2} \frac{4x+2x}{3x-2x} = \frac{\lim 4(2)+2(2)}{3(2)-2(2)} = \frac{8+4}{6-4} = \frac{12}{2} = 6$$

$$\lim_{x\to 2} [2x]^3 = [2(2)]^3 = [4]^3 = 64$$

$$\lim_{x\to 6} \sqrt{2x} = \lim \sqrt{2(6)} = \lim \sqrt{12} = \lim 3.464$$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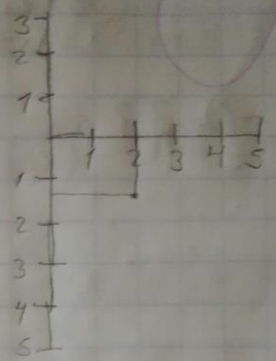
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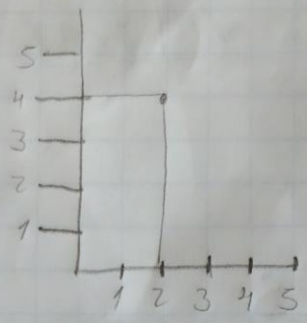
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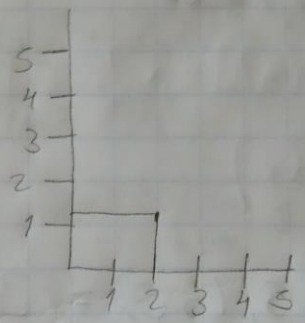
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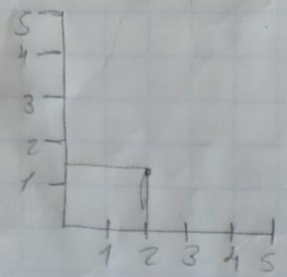
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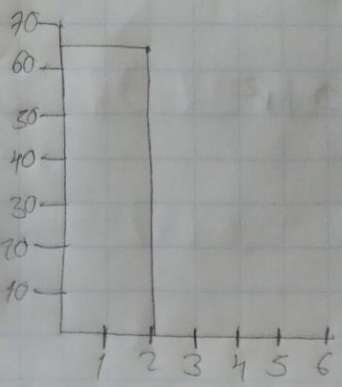
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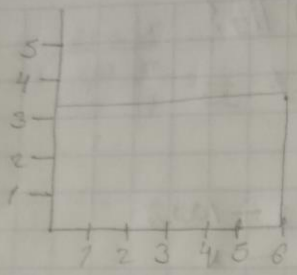
1 2 3 4 5 6



① $\lim_{x \to 2} \frac{x^2+x-6}{x-2} = \frac{(x+3)(x-2)}{(x-1)} = (x+3) = 2+3 = 5$

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

③ $\lim_{x \to 2} \frac{(x^2-4)}{(x-2)} = \lim \frac{(x+2)(x-2)}{(x-2)} = (x+2) = (2+2) - 4$

④ $\lim_{x \to 2} \frac{(x^2-5x+6)}{x^2-12x+20} = \frac{(x-3)(x-2)}{(x-10)(x-2)} = \frac{(2-3)}{(2-10)} = \frac{1}{-8} =$

$\frac{-6[\lim_{x\to 2} x^2+x]}{-2(\lim_{x\to 2} x)} = \frac{-6[\lim_{x\to 2}(2)^2+(2)]}{-2(\lim_{x\to 2}(2)} = \frac{-6[4+2]}{-2(2)} = \frac{-(6)}{-2(2)}$

$= \frac{-36}{-4}$

Propiedades de los límites

$\lim_{x\to a} C = C$ $\quad\quad$ $\lim_{x\to 3} 5 = 5$

$\lim_{x\to a} x = a$ $\quad\quad$ $\lim_{x\to 3} x = 3$

$\lim_{x\to a} x^n = a^n$ $\quad\quad$ $\lim_{x\to 3} x^2 = 3^2 = 9$

$\lim_{x\to a} \sqrt[n]{x} = \sqrt[n]{a}$ $\quad\quad$ $\lim_{x\to 2} \sqrt[3]{2} = 1.41$

1- $\lim_{x\to a} k[f(x)] = k \lim_{x\to a} f(x) = kL$

Ejemplos

$\lim_{x\to 2} 3x^3 = 3(2)^3 = 3(8) = 24$

$\lim_{x=4} 6x^2 = 6(4)^2 = 6(16) = 96$

$\lim_{x \to 4} \sqrt{x}$ $\lim_{x \to 0}$

* $\lim_{x \to a} \sqrt[n]{x} = \sqrt[n]{a}$

Ejemplo: $\lim_{x \to 4} \sqrt{x} = \lim \sqrt{4} = 2$

* $\lim_{x \to a} f(x) \pm g(x) = \lim_{x \to a} f(x) \pm \lim_{x \to} g(x) = L \pm M$

Ejem: $\lim_{x \to 3} 3x + 4x = 3(3) + 4(3) = 9 + 12 = 21$

* $\lim_{x \to a} f(x) \cdot g(x) = \lim_{x \to} f(x) \cdot \lim_{x \to a} g(x) = L \cdot M$

Ej: $\lim_{x = 2} 4x^2 \cdot 3x^2 = 4(2)^2 \cdot 3(2)^2 = 4(4) \cdot 3(4) =$

$16 \cdot 12 = 192$

* $\lim_{x = a} f(x) \div g(x) = \lim_{x \to a} f(x) \div \lim_{x \to a} g(x) = L \div M,$

$M \neq 0$

$\lim_{x \to 2} \frac{x^2}{x^3} = \frac{\lim_{x \to 2} x^2}{\lim_{x \to 2} x^3}$

constante

$$\lim_{x \to 2} \frac{y^2 - 2}{x^3 + 3} = \frac{-2\left(\lim_{x \to 2} x^2\right)}{3\left(\lim_{x \to 2} x^3\right)} = \frac{-2(2)^2}{3(2)^3} = \frac{-2(4)}{3(8)}$$

$$= \frac{-8}{24} = -0.333$$

PH 6

$$\lim_{x \to 6} k f(x)$$

$$\lim 6(6) = 36$$

PH 9

$$\lim_{x \to 9} k f(x)$$

$$\lim 9(9) = 81$$

$$\lim_{x \to 5.5} k f(x)$$

$$\lim (5.5)(5.5) = 30.25$$

$$\lim_{x \to 6} 80 + x^2$$

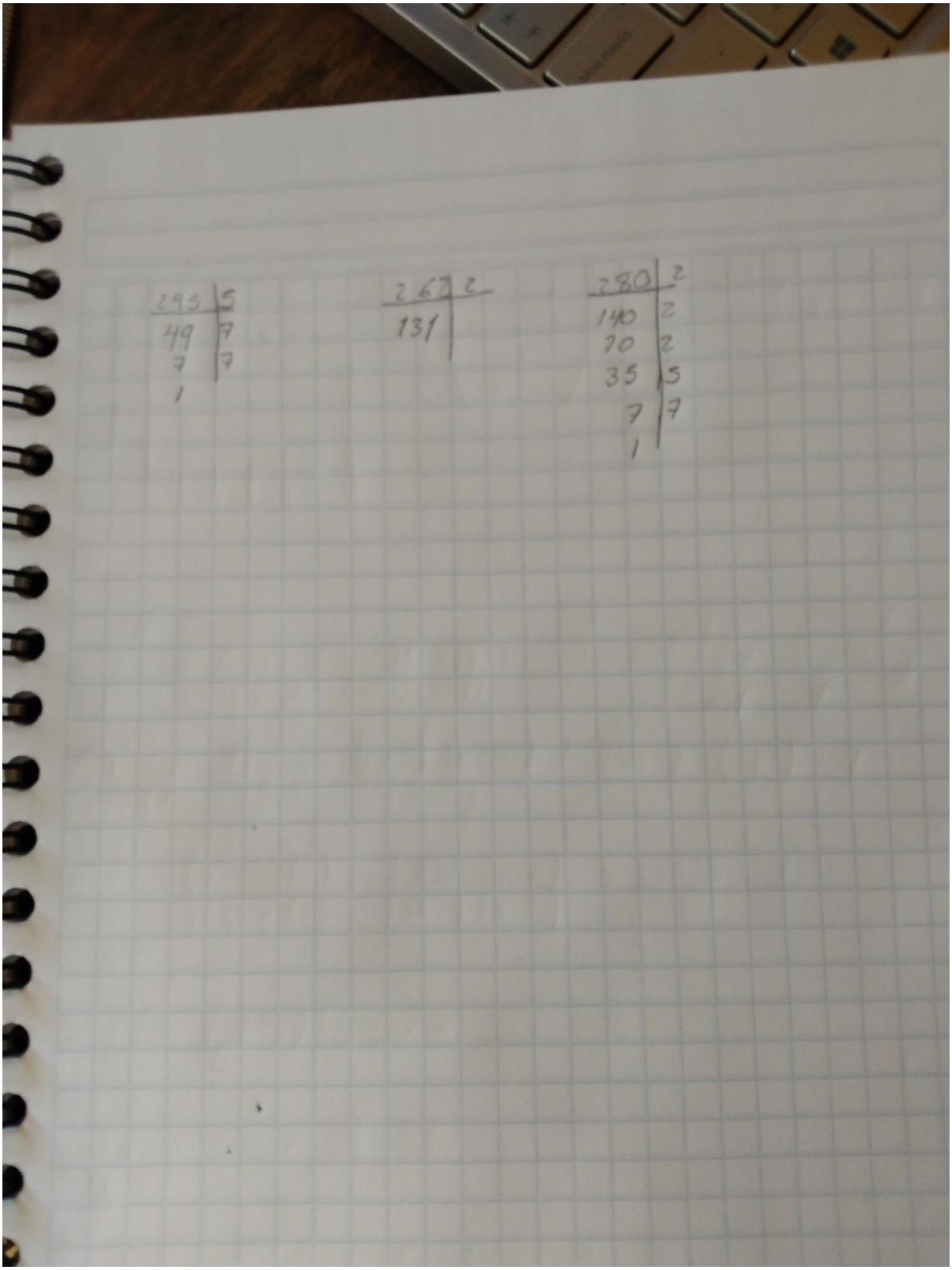
Ph 7 Ph 7.5 ph 8 ¿Sat o² Hb?

PO^2 mmHg 35

Lim 35x = 35(7) = 245 = 245 — 100%
Ph→7 7 — x

Lim 35x = 35(7.5) = 262.5
Ph→7.5

Lim 35 = 35(8) = 280
Ph→8


295 | 5
49 | 7
7 | 7
1
267 | 2
131
280 | 2
140 | 2
70 | 2
35 | 5
7 | 7
1