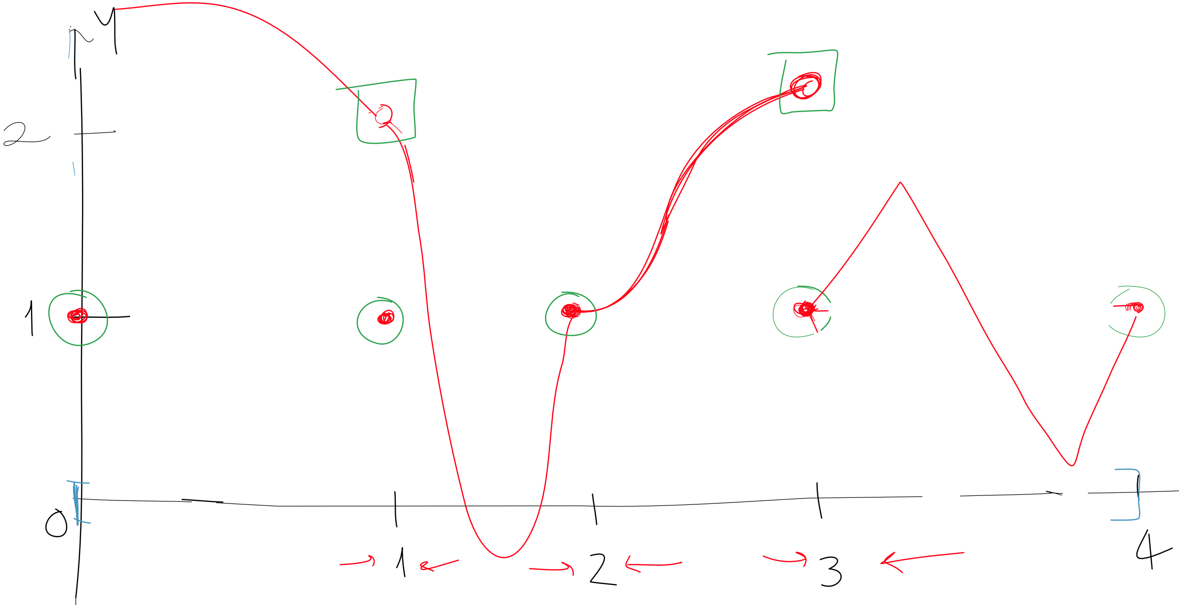
8)



$$\lim_{x\to 1} f(x) = 2$$

$$\lim_{x\to 2} f(x) = 1$$

$$\lim_{x\to 3} f(x) = 2$$

$\mathrm{Dom} = [0,4]$

Feb/7/19

$$\lim_{h\to 0} \frac{2(x+h)^2 - 2x^2}{h}$$

$$= \lim_{h\to 0} \frac{2(x^2+2xh+h^2)-2x^2}{h}$$

$$= \lim_{h\to 0} \frac{\cancel{2x^2}+4xh+2h^2-\cancel{2x^2}}{h}$$

$$= \lim_{h\to 0} \frac{4xh+2h^2}{h}$$

①

$$= \lim_{h\to 0} \frac{\cancel{h}}{}$$

$$= \lim_{h\to 0} 4$$

$$= 4x +$$

$$= 4x$$

Se denom
derivada

$$\frac{(4x+2h)}{\cancel{h}}$$

$x+2h$

$2(0)$

ina la
de f(x)

②

h)

$f(x)=\sqrt{x}$

$f(*)=\sqrt{*}$

$$\lim_{\Delta x\to 0}\frac{f(\boxed{x+\Delta x})-f(x)}{\Delta x}$$

$$=\lim_{\Delta x\to 0}\frac{\sqrt{\boxed{x+\Delta x}}-\sqrt{x}}{\Delta x}$$

$$=\lim_{\Delta x\to 0}\frac{\sqrt{x+\Delta x}-\sqrt{x}}{\Delta x}\cdot\frac{\sqrt{x+\Delta x}+}{\sqrt{x+\Delta x}}$$

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

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

$$\lim_{\Delta x \to 0} \frac{(\cancel{\sqrt{x+\Delta x}})^{\cancel{2}} - (\cancel{\sqrt{x}})^{\cancel{2}}}{\Delta x\left(\sqrt{x+\Delta x}+\sqrt{x}\right)}$$

$$\lim_{\Delta x \to 0} \frac{\cancel{x}+\Delta x-\cancel{x}}{\Delta x\left(\sqrt{x+\Delta x}+\sqrt{x}\right)}$$

$$\lim_{\Delta x \to 0} \frac{\cancel{\Delta x}}{\cancel{\Delta x}\left(\sqrt{x+\Delta x}+\sqrt{x}\right)}$$

$$\lim_{\bigcirc\!\!\!\!\Delta x \to 0} \frac{1}{\sqrt{x+\Delta x}+\sqrt{x}} = \frac{1}{\sqrt{x+(\,}}$$

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

La derivada de $f(x)=\sqrt{x}$ es $\frac{1}{2\sqrt{x}}$

$)+\sqrt{x}$

$\sqrt{x} = \boxed{\frac{1}{2\sqrt{x}}}$

6) $\lim\limits_{x\to 1} \frac{x^3-1}{x-1} = \frac{0}{0}$ ind

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

$\lim\limits_{x\to 1} x^2+x+1 = (1)+(1$

$= \boxed{3}$

$$a^3-b^3=(a-b)(a^2+ab+b^2)$$

6, $$\lim_{x\to 0}\frac{|x|}{x}=\frac{0}{0}\ ?$$

+1

note $$|x|=\begin{cases} x\ , & x\geq 0 \\ -x\ ; & x<0 \end{cases}$$

$$|-2|=-(-2)=2$$

$$\therefore \lim_{x\to 0}\frac{|x|}{x}$$

$$\lim_{x\to 0^-} \frac{|x|}{x}$$

$$\boxed{x<0}$$

$$= \lim_{x\to 0^-} \frac{-\cancel{x}}{\cancel{x}}$$

$$= \lim_{x\to 0^-} -1 = \boxed{-1}$$

$$\lim_{x\to 0^+} \frac{|x|}{x}$$

$$\boxed{x>0}$$

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

$$= \nexists$$