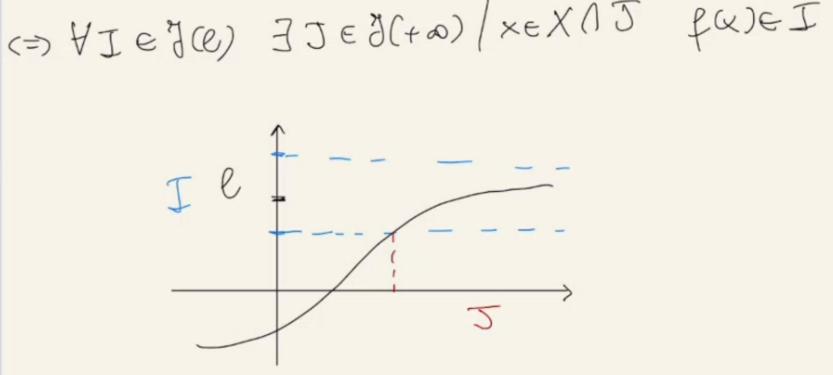
LIMITI DI FUNZIONI f: X S R > R X vitervallo o unione finite di vitervalli Xo EX appure xo è un estremo di uno degli intervalli che compongono X 1) XOEIN, 2) XO=+0, 3) XO=-00 2) Xo= +00

lem f(x)=leth x> to



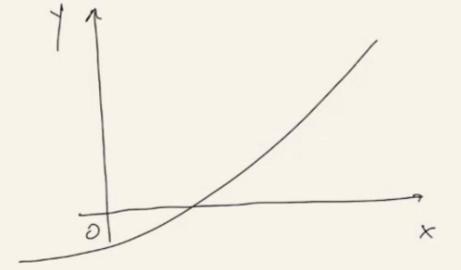
Equivalentemente 8<2x, X3X OC8E OC3H 1f6)-e/cE es: lim wetgx = I 4>+00 y = evetox

es:
$$\lim_{x \to +\infty} 1 = 0$$

$$\lim_{x \to +\infty} x = 0$$

è della ASINTOTO OFIZZALE 9 too. de zettar y=l · lem f(x) = +00 (=) YI ES(+a) BJES(+a) (xEXAJ fle)EJ

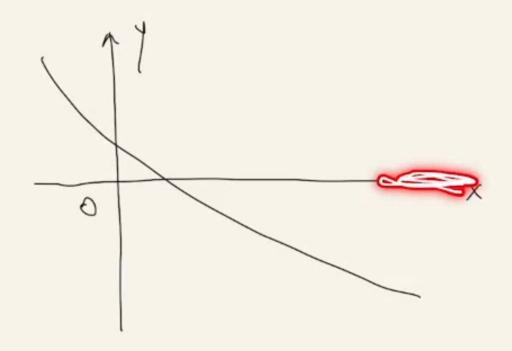
Eguvalentemente YK>0 75 >0/x & X, x>8 fa)>K



lem x=+0, lem a=+0 se a>1 XJ+0 X>+0

 $\lim_{x \to +\infty} \log x = +\infty \quad \Re q > 1$

· lem fa)=-0 ×>+0 (2) HIEJ(-0) JJEJ(+0) / ×EX/JJ fa)EJ Equivolentemente VK>0 J8>0 / ×EX, ×>5 fa) C-k.



es: lim log x = -00 X>fo N 0 CQ 2 1 OSS: C'é un'analogie tre le définizioni appena siste e quelle di successioni conserpenti, disespenti pos. e neg. les esempio

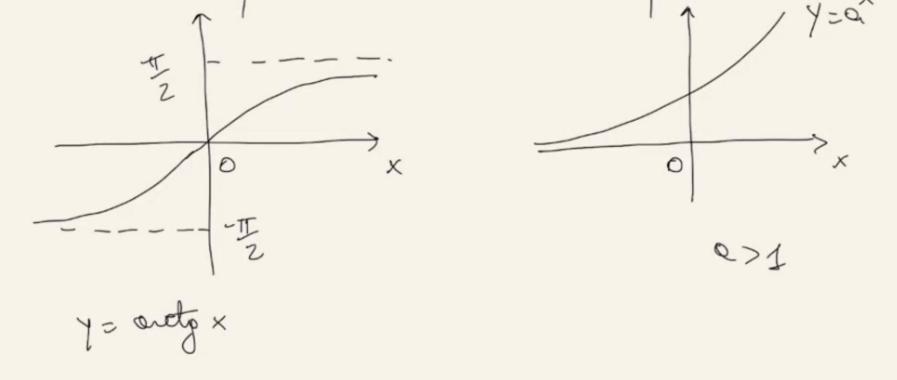
lum quiel (3) YENO FREN/MN | 2m-l/2E

Min f(x)-l (5) YENO J8>0 | x>8 (f(x)-e/2E

x>+00

3) $x_0 = -\infty$ $\lim_{x \to -\infty} f(x) = \ell \in \mathbb{A}$ $(\Rightarrow) \forall J \in \mathcal{J}(e) \exists J \in \mathcal{J}(-\infty) / x \in X \cap J \quad f(x) \in J$

Equivoclentemente VESO 3550/XEX, XZ-5° [fa)-l(ZE

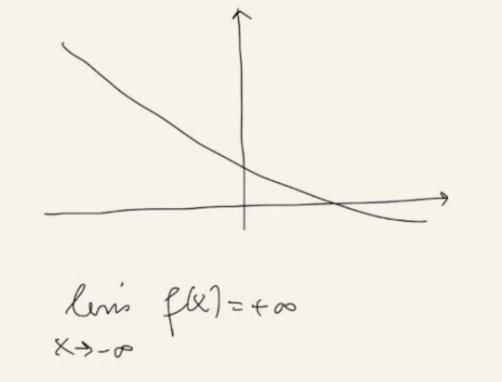


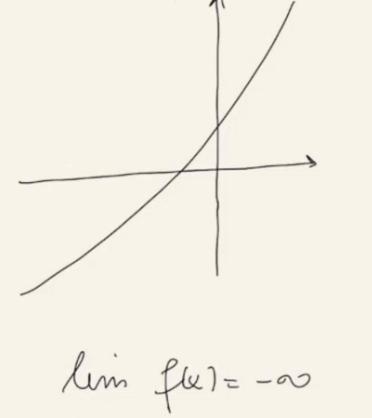
Le rette y-l è dette ASINTOTO OFIZZONTALE Q-00.

(D) YIEJ((a)) JJEJ((a)) XEX (JJ fa)EJ Equivolentemente 4K>0 3570 | X EX, XL-8 fa)>K · lem f(x) = -00 (3) YIE J(-0) JJEJ(-0) [XEXAJ fa) e I Equi voilente mente

· lem f(x)=+0

VK>0 38>0/xEX,xC-8 fa)2-k.





lum
$$x^2 = +\infty$$
, lum $\alpha^x = +\infty$ se $0 < \alpha < 1$
 $x > -\infty$

lum $x^3 = -\infty$
 $x > -\infty$
 $y = x^3$
 $x > -\infty$

055: Seriviamo esplicitamente il legorme che ristercource tre li miti di funzioni e li miti di successioni. Teor PONTE

f: X E Ih > Ih

X intervallo o unione finite di viste rialli

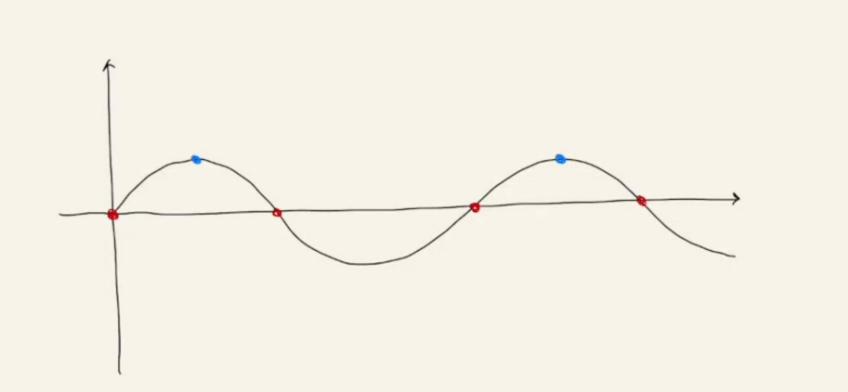
X o E X o xo est remo di uno depli vistervalli che

compossoso X

f(w)=lek (=> + fxm) EX, lum xn=xo, SX CX Xn f Xo Yn EN, lun f(xn) = l_

mt = ax

Il text ponte è utile per dimost zore che un limite non existe. Hem sinx-, lim(0+nu)=+0 Samo Xm = O+MT luis seis (O+MT) = O ling (I + 2011) = +00 1n= #+2mTT lin sin (1 + 2 mm) = 1.



2) per casa) Herris cosx, Herris stinx. Heni cosx Inoltre, il teor ponte consente di riccondurre la studio di gran parte delle proprietà dei Cimiti di funzioni d quello delle anadophe papiete dei limiti di recession.

Teoz di unicità di limite Se f è regolore per x > xo e IR, allora essa ammette un unico limite.

f Eugolone per
$$x \ni x_0 \in \mathbb{R}$$

lim $f(x) = l > 0 \Rightarrow \exists J \in \exists (x_0) \mid f(x) > 0, x \in \mathbb{J}$
 $x \ni x_0$
 < 0
 $< f(x) > 0 \forall x \in X \Rightarrow lem f(x) > 0$
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 < 0
 $<$

Teoz. della permomenza del segno

e):

lem 1 =0 e 1 >0 4x>0

x>+>+> x

lem e =0 e e >> 0 4x ER.

Teoz, del confronto fig regolari per x > xo Ex

· lim f(x) > lim g(e) =) FJEB(x0) (f(x) > g(e), x>100 (x>100)

_

6