SERIES DE TAYLOR

$f(x) : \mathbb{R} \to \mathbb{R}$

$f(\cdot)$ ANALITICAS: $\exists\, B_r(x_0) : \forall x \in B_r(x_0) :$

$$\boxed{f(x) = \sum_{i=0}^{\infty} \frac{f^{(i)}(x_0)(x-x_0)^i}{i!}}$$

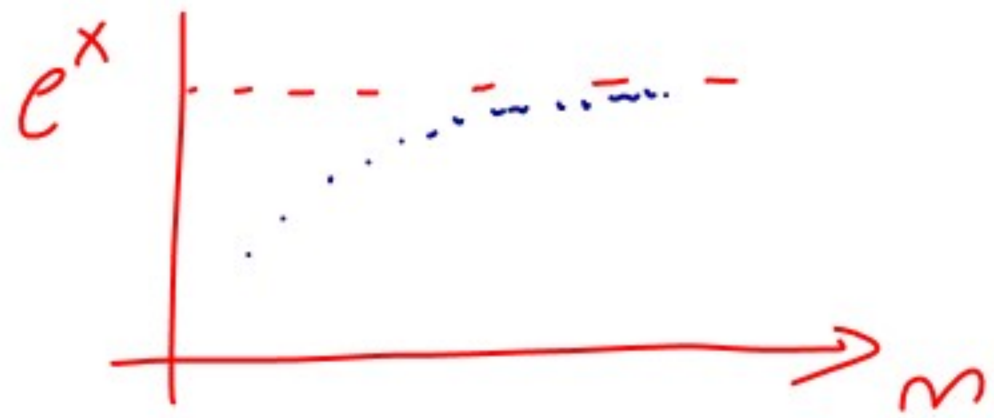
$B_r(x_0) = \{ x \in \text{Salida} \,/\, |x_0 - x| < r \}$

NO ANALITICA:

$$f(x) = \begin{cases} e^{-1/x^2} & x \neq 0 \\ 0 & x = 0 \end{cases}$$

$f(x) = e^x$

i	0	1	2	3	4
$f^{(i)}$	e^x	e^x	e^x	e^x	e^x
$f^{(i)}(0)$	1	1	1	1	1
$\frac{f^{(i)}(0)}{i!}$	$\frac{1}{0!}$	$\frac{1}{1!}$	$\frac{1}{2!}$	$\frac{1}{3!}$	$\frac{1}{4!}$



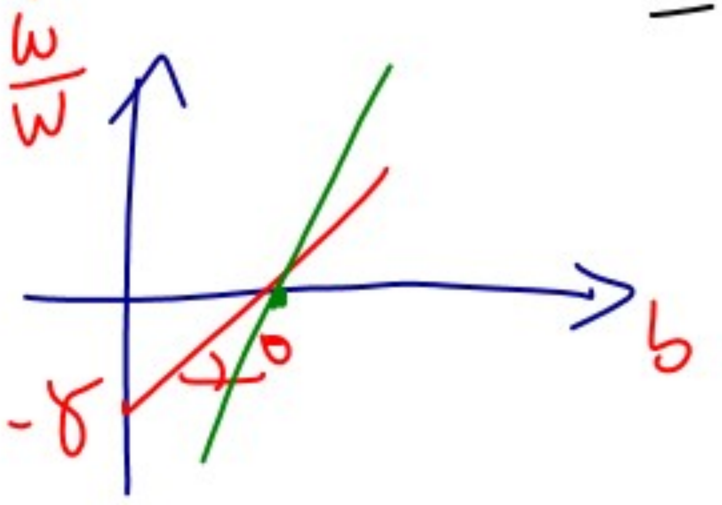
$$e^{+x} = \sum_{i=0}^{\infty} \frac{f^{(i)}(x_0)}{i!} (x - x_0)^i$$

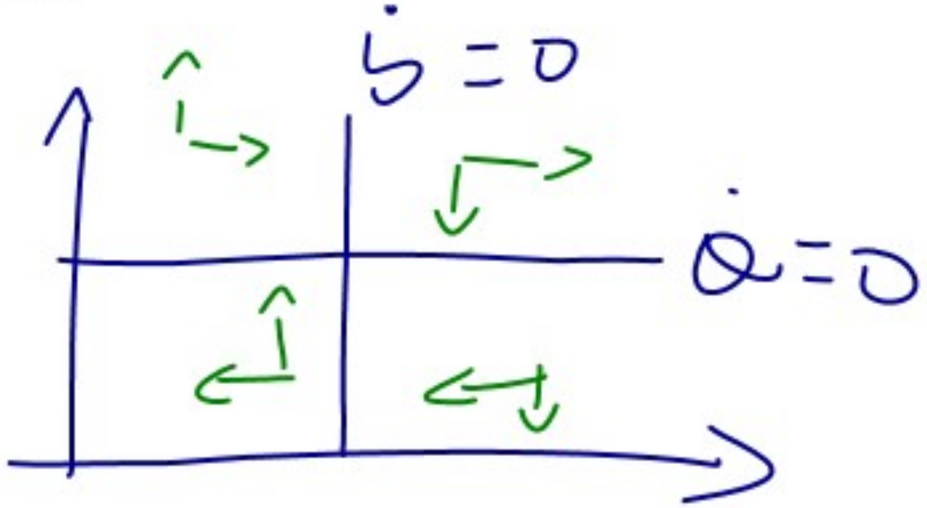
$$e^x \approx \sum_{i=0}^{n} \frac{x^i}{i!} = S_n$$

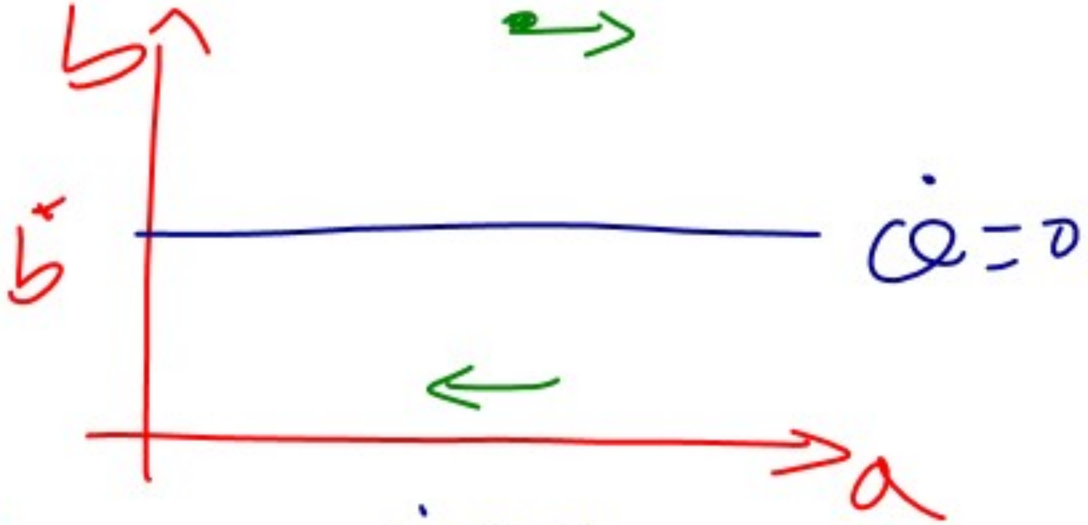
GOODWIN

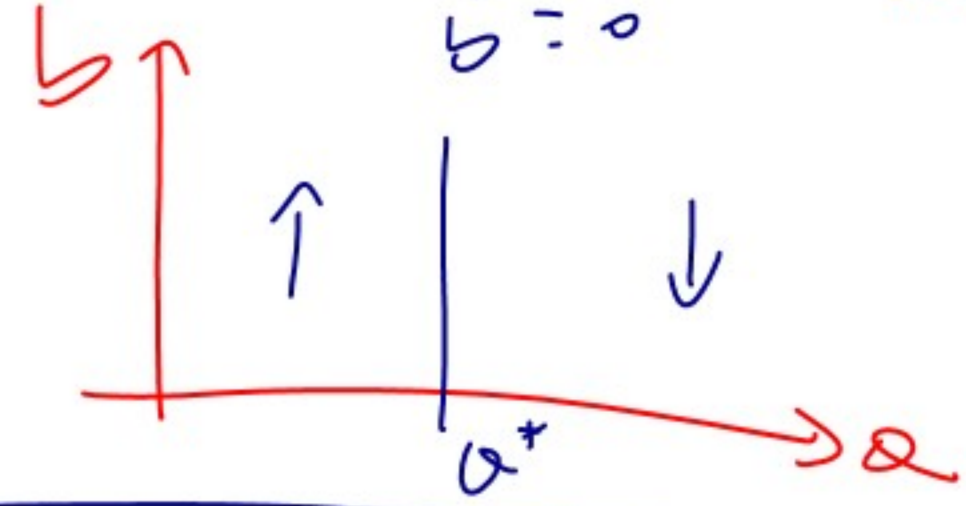
$$\dot{a} = (-\gamma + \theta b - \hat{\alpha})\, a$$

$$\dot{b} = \left(\frac{1-a}{\sigma} - \hat{\alpha} - \hat{m}\right) b$$









$$\begin{cases} b^* = \dfrac{\gamma + \hat{\alpha}}{\theta} \\ a^* = 1 - \sigma(\hat{\alpha} + \hat{m}) \end{cases}$$

$$\dot{a} = \left(-\gamma + \theta b - \hat{\alpha}\right) a$$

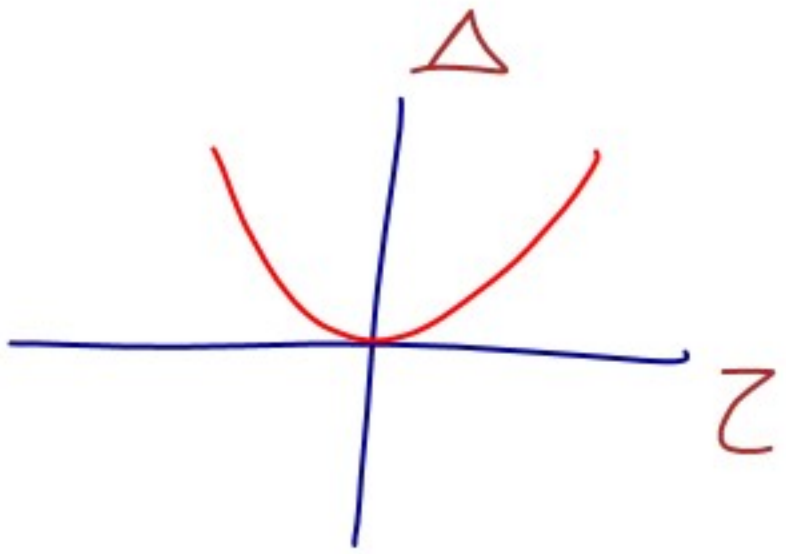
$$\dot{b} = \left(\frac{1-a}{\sigma} - \hat{\alpha} - \hat{m}\right) b$$

$$\begin{pmatrix} \frac{\partial \dot{a}}{\partial a} & \frac{\partial \dot{a}}{\partial b} \\ \frac{\partial \dot{b}}{\partial a} & \frac{\partial \dot{b}}{\partial b} \end{pmatrix}$$

$$\begin{pmatrix} -\gamma + \theta b - \hat{\alpha} & \theta a \\ -\frac{b}{\sigma} & \frac{1-a}{\sigma} - \hat{\alpha} - \hat{m} \end{pmatrix}$$

$$\begin{pmatrix} a = a^* \\ b = b^* \end{pmatrix}$$

$$\begin{pmatrix} \dot{x} \\ \dot{y} \end{pmatrix} = A \begin{pmatrix} x \\ y \end{pmatrix}$$



SEN(X) $\qquad x_0 = 0$

i	0	1	2	3	4	5
$SEN^{(i)}(x)$	SEN(x)	COS(X)	-SEN(X)	-COS(X)	SEN(X)	COS(X)
$SEN^{(i)}(0)$	0	1	0	-1	0	1

$$S_n = \sum_{i=0}^{n} \frac{x^{2i+1}}{(2i+1)!}(-1)^i$$

i	$2i+1$	$(-1)^i$
0	1	1
1	3	-1
2	5	1
3	7	-1