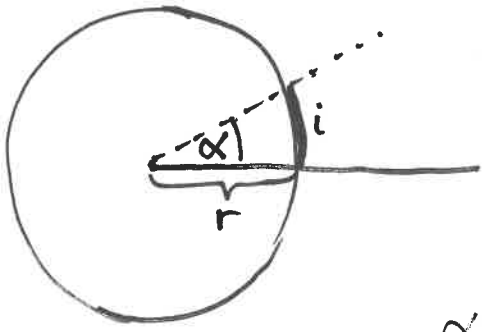
Angles

[ ] → unit / dimension of

in RADIAN



$\alpha = \frac{i}{r}$

$[i] = m \quad [r] = m$

$[\alpha] = \frac{[i]}{[r]} = \frac{m}{m} = 1$ rad

degree (°)

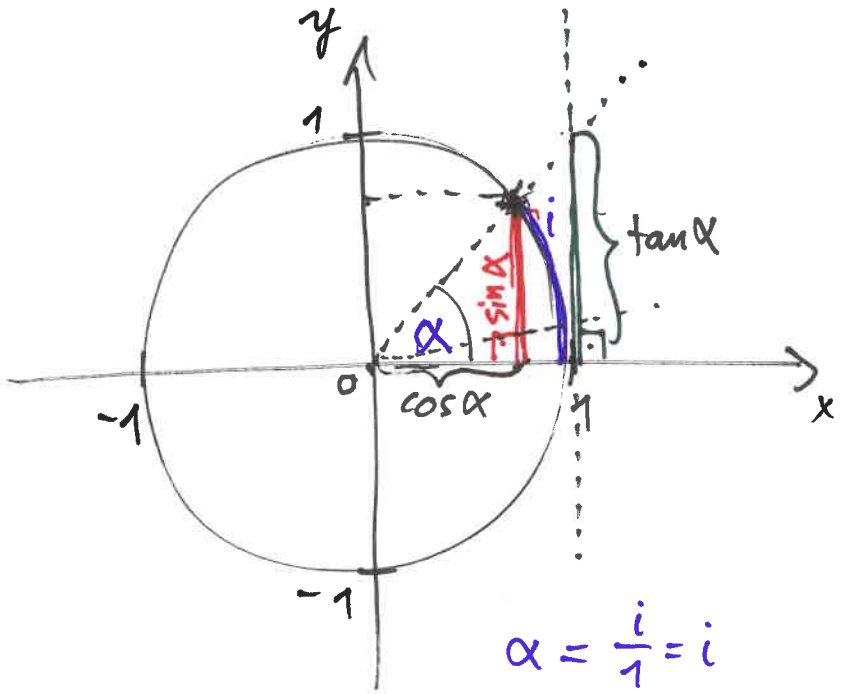
$\alpha = \frac{2\pi r}{r} = 2\pi$ rad $\Leftrightarrow 360°$

π rad $\quad 180°$

1 rad $\quad \beta$

proportional: equal ratios $\quad \frac{1 \text{ rad}}{\pi \text{ rad}} = \frac{\beta}{180°}$

$\beta = \frac{1}{\pi} \cdot 180° = 57{,}3°$



$\alpha = \frac{i}{1} = i$

$\sin\alpha =$

for small angles $< 10°$

$\sin\alpha \lessapprox \alpha \text{ (rad)} \lessapprox \tan\alpha$

~~Dig~~
ein
exp
pow
log

$y = a \cdot x + b$ | linear f'n

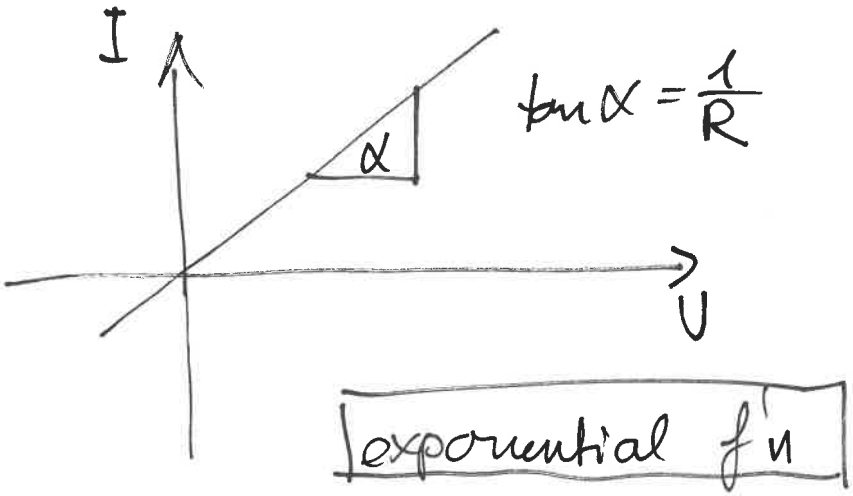
if $x = 0$ then $y = b$ $\xrightarrow{+a}$

$\xrightarrow{+1}$ if $x = 1$ then $y = a + b$ $\xrightarrow{+a}$

$\xrightarrow{+1}$ if $x = 2$ then $y = 2a + b$

$\Delta x = 1 \qquad \Delta y = a$

$$a = \frac{\Delta y}{\Delta x}$$



$\tan\alpha = \frac{1}{R}$

exponential f'n

$y = y_0 \cdot e^{-px}$

if $x = 0$ then $-px = 0$

$e^0 = 1$

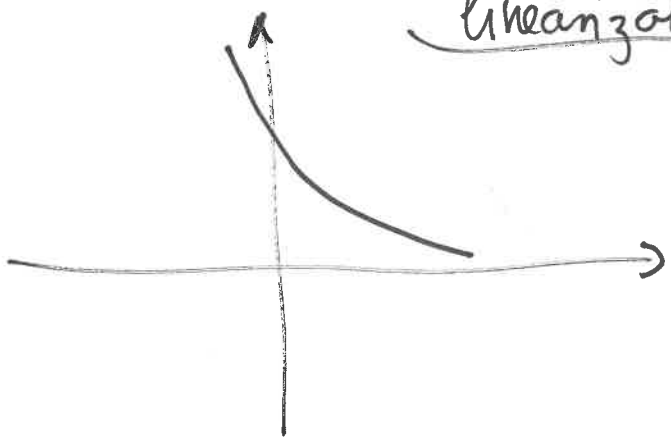
$y = y_0 \cdot 1$

if $\frac{1}{p} = x$ then $-px = -1$

$e^{-1} = \frac{1}{e}$

$y = y_0 \cdot \frac{1}{e} = \frac{y_0}{e}$

linearization



$$y = y_0 \cdot e^{-p \cdot x} \quad \| \log$$

$$\log(y) = \log(y_0 \cdot e^{-p \cdot x})$$

$$\log(y) = \log(y_0) + \log(e^{-px})$$

$$\log(y) = \log(y_0) + (-px) \cdot \log(e)$$

$$\log(y) = -p \cdot \log(e) \cdot x + \log(y_0)$$

$$Y = a X + b$$

$$\log(a \cdot b) = \log(a) + \log(b)$$

$$\log(a^b) = b \cdot \log(a)$$