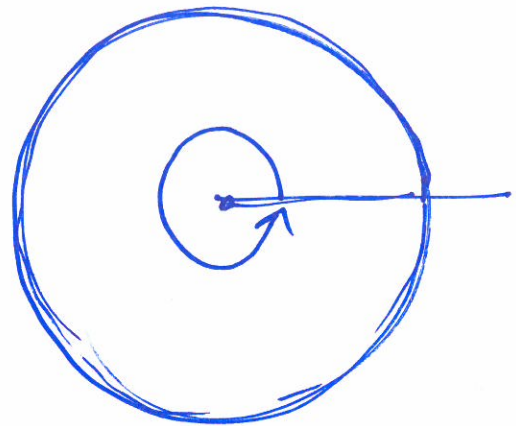
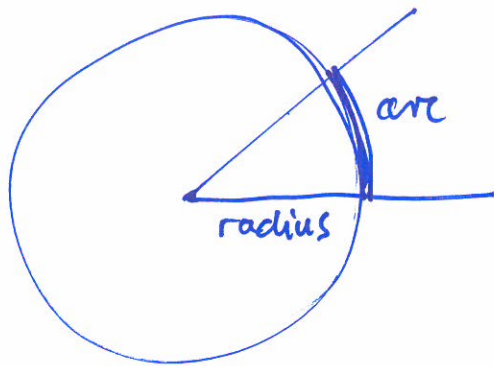


$$\text{Angle} = \frac{\text{arc}}{\text{radius}} \quad [\text{radian}]$$



1 revolution

$$\frac{2\pi r}{r} = 2\pi \quad [\text{rad}]$$

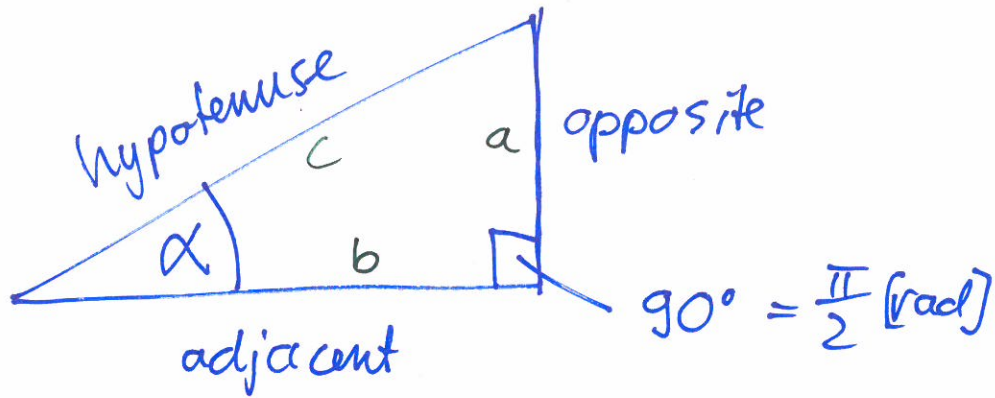
$360^\circ$

Function:

relationship (= equation) between changing quantities  
variable

e.g. freefall: time & displacement  
speed & time  
acceleration & time

# Trigonometric functions

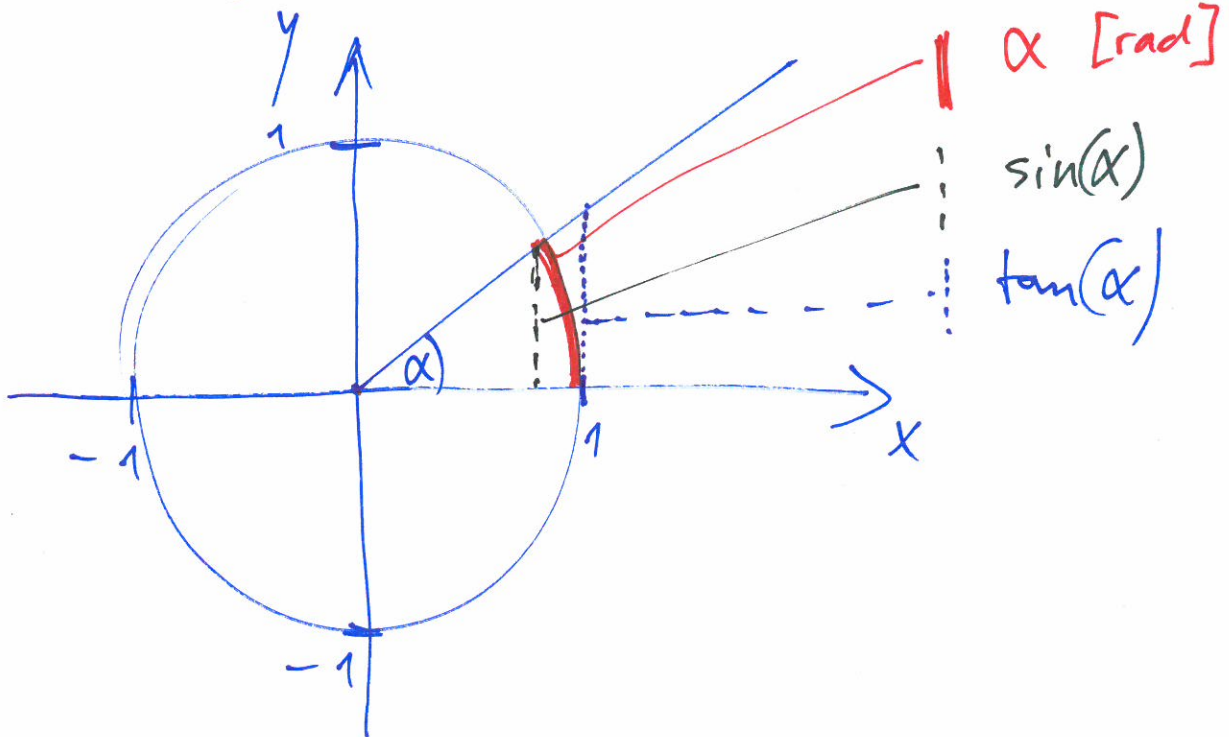


$$\sin(\alpha) = \frac{a}{c}$$

$$\cos(\alpha) = b/c$$

$$\tan(\alpha) = \text{tg}(\alpha) = a/b$$

UNIT CIRCLE



# Linear Function

$$y = ax + b$$

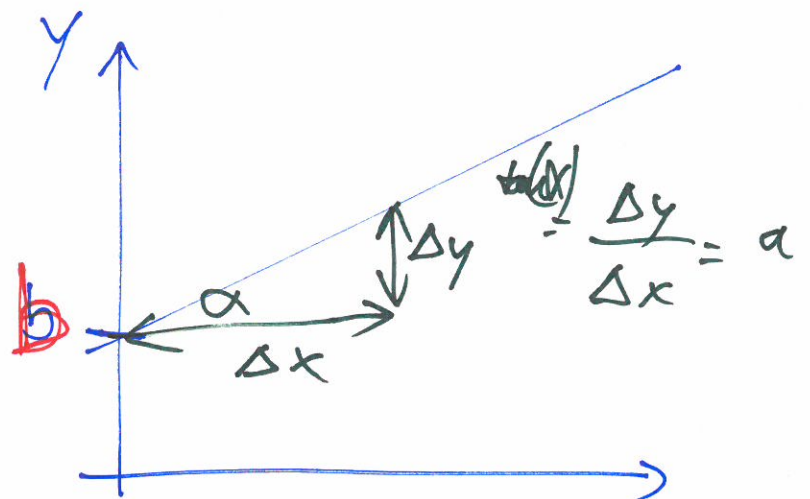
↑  
dependent variable

↓ slope

↑ independent variable

$$v_t = a \cdot t + v_0$$

Y-axis intercept

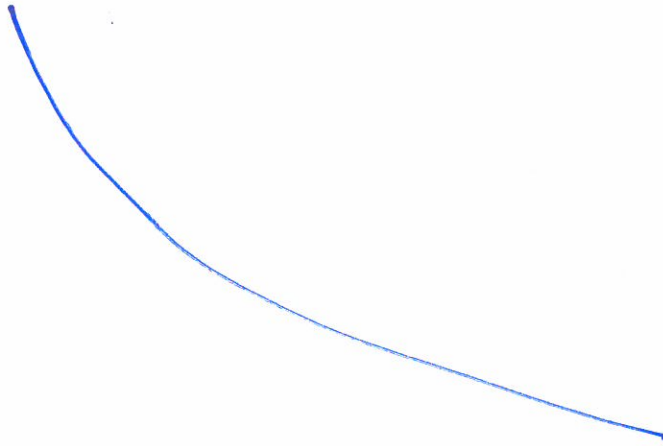


if  $b=0 \rightarrow$  direct proportionality  $x$

$$\pi = 3.1418 \dots$$

$$e = 2.718 \dots$$

# Linearization



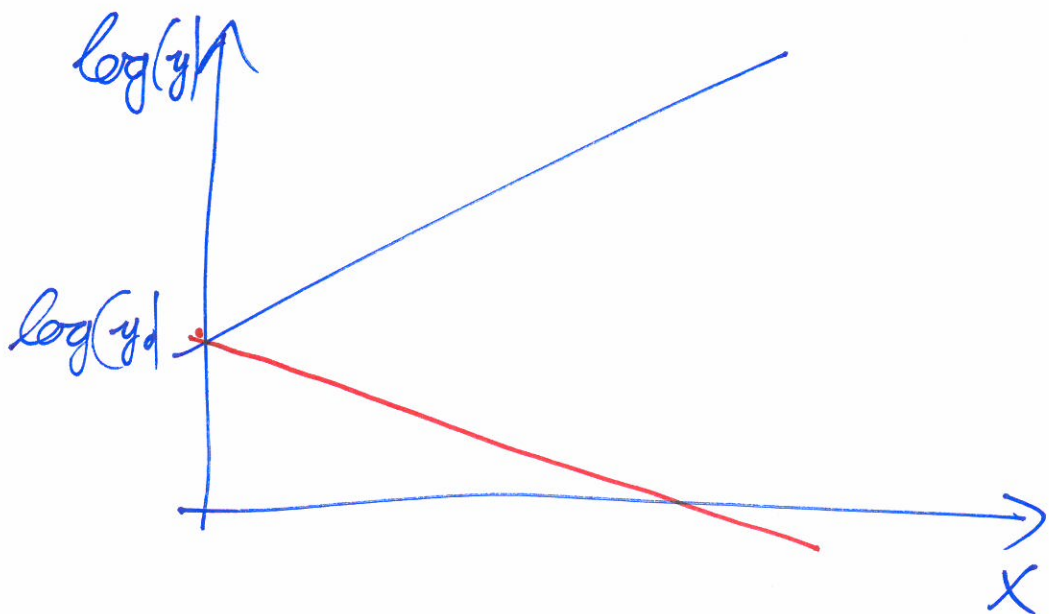
$$y = y_0 \cdot e^{-px}$$

$$\begin{aligned}\log(y) &= \log(y_0 \cdot e^{-px}) \\ &= \log(y_0) + \log(e^{-px})\end{aligned}$$

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

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

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



# Exponential vs. Power Function

$$y = b \cdot a^{(x)}$$

$$y = b \cdot (x)^a$$