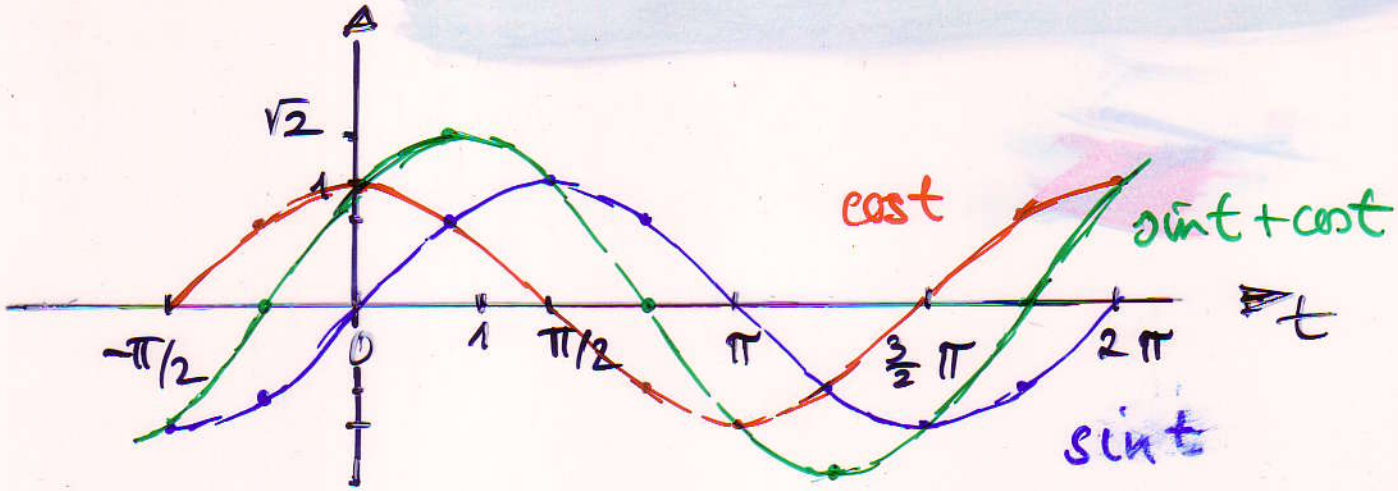
10.3



$$a\sin(\omega t+\varphi) = a\cos\varphi\,\sin\omega t + a\sin\varphi\,\cos\omega t$$

$$\sqrt{2}\left(\sin\left(t+\frac{\pi}{4}\right)\right) = \sqrt{2}\,\frac{1}{\sqrt{2}}\sin t + \sqrt{2}\,\frac{1}{\sqrt{2}}\cos t$$

$$a\sin(\omega t+\varphi) = b\sin\omega t + c\cos\omega t$$

$$\Longleftrightarrow \qquad b = a\cos\varphi \qquad c = a\sin\varphi$$

$$a^2 = b^2 + c^2$$

Satz ω fest. $\neq 0$

Die Funktionen $f(t) = a\sin(\omega t+\varphi)$ bilden $\mathbb{R}$-Vektorraum mit Basis $\sin\omega t$, $\cos\omega t$

Beweis $\sin\omega t \neq 0$ (z.B. $t = \pi/2\omega$)

ang. $\cos\omega t = r\sin\omega t$ also

$$1 = \cos\omega 0 = r\sin\omega 0 = 0 \quad \lightning$$