ecna: Übung A.6

1) $\alpha = 30° \frac{\pi}{180} = \pi/6$ ✓ $\beta = 135° \frac{\pi}{180} = 3\pi/4$ ✓

$\gamma = 270° \frac{\pi}{180} = 3\pi/2$ ✓ $\delta = 390° \frac{\pi}{180} = 2\pi + \pi/6 = 13\pi/6$ ✓

$\varepsilon = 133° \frac{\pi}{180} = \frac{133\pi}{180}$ ✓

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b) $\pi/30 = 60°$ ✓ $\beta_2 = 2\pi/5 \cdot \frac{180°}{\pi} = 72°$ ✓ $\gamma = 9/5 \frac{180}{\pi} = \cancel{324°}$ ✗ 103.132

$5\pi/120 \cdot 180 = 5\pi \cdot 15 = 75°$ ✓

3) a) $y = \sin(2\pi t)$ •

b) $y = 2\cos(2\pi t + \pi/4)$ •

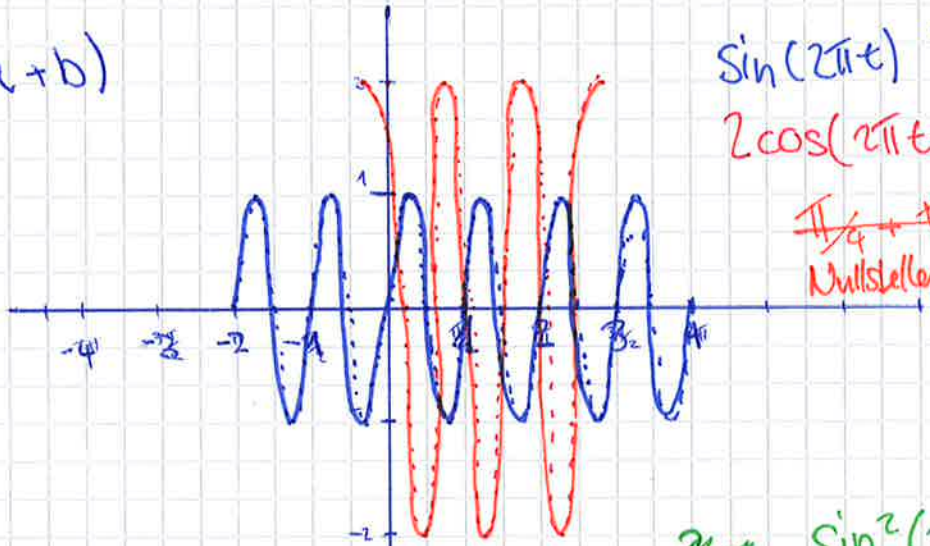
c) $y = \sin^2(t)$ • $\Rightarrow \frac{1}{2} - \frac{1}{2}\cos(2x) = \frac{1}{2} + \frac{1}{2}\cos(2x - \pi)$ $1/2 + \cos(x - \pi/2)$

d) $y = \sin(t)\cos(t)$ •

e) $y = \sin(2t)\cos(t)$

f) $y = \sin(2t)\cos(t) - \sin(t)$

a+b)



Null: $\pi/2 \cdot k$

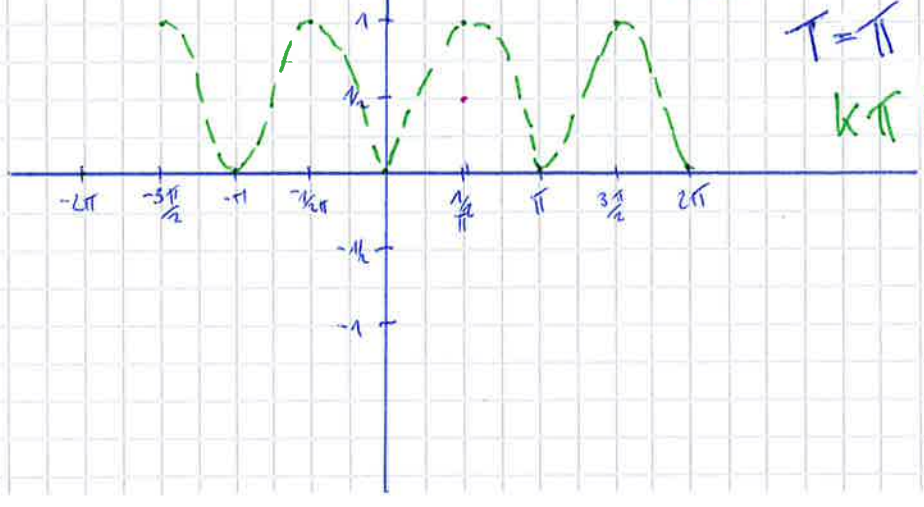
$\sin(2\pi t)$ $T = \pi$

$2\cos(2\pi t + \pi/4)$ $T = \pi$

~~$\pi/4 + \pi/2\,k$ (Nullstellen)~~

Nullstellen: $\frac{1}{8} + \frac{\pi}{2}k$

c)

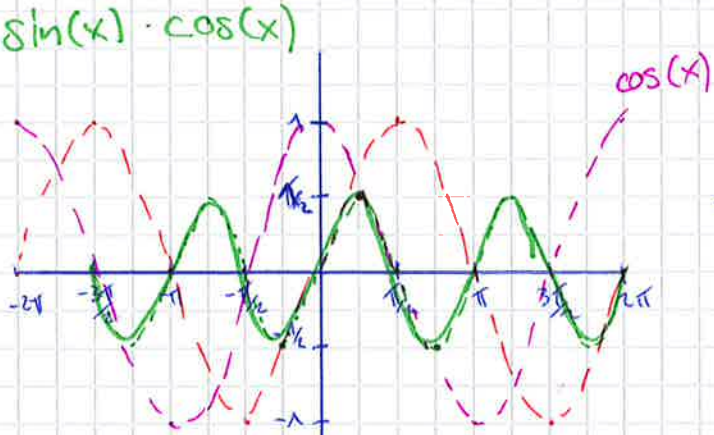


Nullstellen $\sin^2(t)$

$T = \pi$

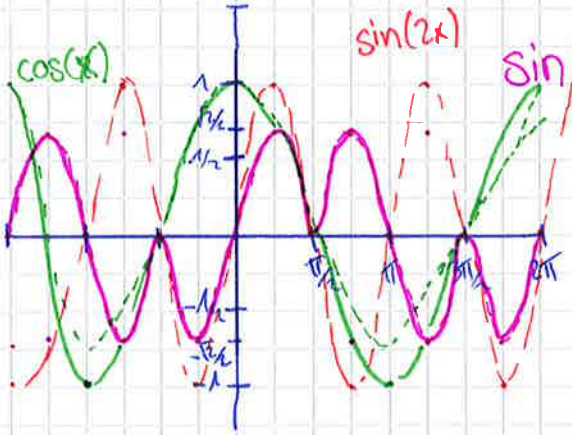
$k\pi$ (Nullstellen)

d)



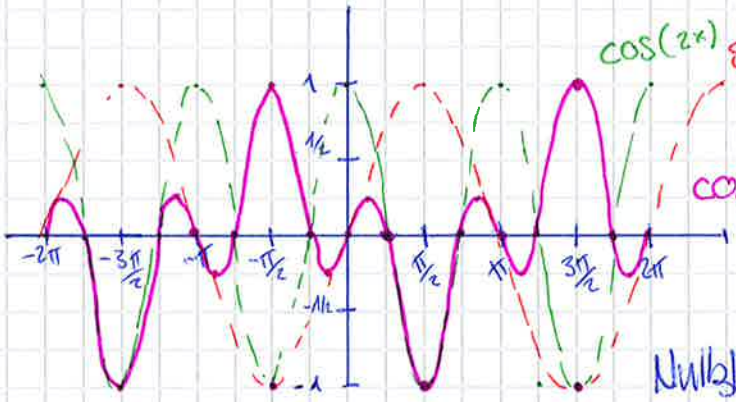
$T = \pi$ $\pi/2\,k$ (Nullst.)

e)



$T = 2\pi$ $\pi/2\,k$ (Nullst.)

f)



Periode: $T = 2\pi$

Nullstellen:

$k\pi$ & $(k \pm \frac{1}{4})\pi$

$\sin(2x) \cdot \cos(x) - \sin(x)$

$2 \sin x \cdot \cos x \cdot \cos x - \sin x$

$\sin x \,(2 \cdot \cos^2 x - 1)$

$\sin x \,[2(\frac{1}{2}(1 + \cos(2x))) - 1]$

$\sin x \cdot \cos(2x)$