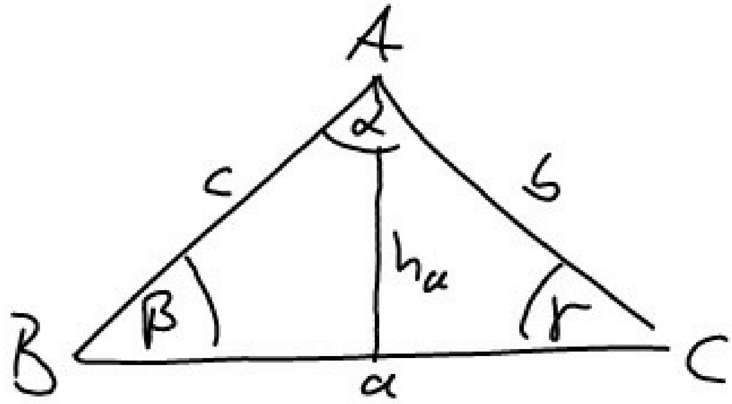
$$\cos(a \pm b) = \cos(a) \cdot \cos(b) \mp \sin(a) \cdot \sin(b)$$



$$U = a + b + c$$

$$A = \tfrac{1}{2} \cdot g \cdot h$$

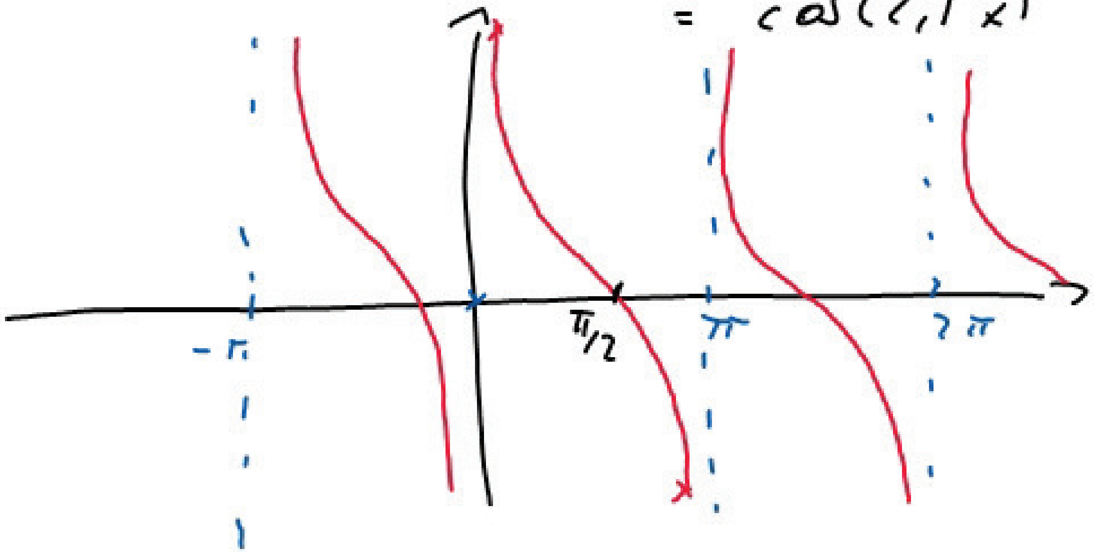
I. a) $\sin(2x - 9\pi) = \sin(2x) \cdot \overbrace{\cos(9\pi)}^{-1} - \cos(2x) \cdot \underbrace{\sin(9\pi)}_{0}$

$$= -\sin(2x)$$

b) $\sin(2{,}5x - 7{,}5\pi) = \sin(2{,}5x) \cdot \overbrace{\cos(7{,}5\pi)}^{0} - \cos(2{,}5x) \cdot \underbrace{\sin(7{,}5\pi)}_{-1}$

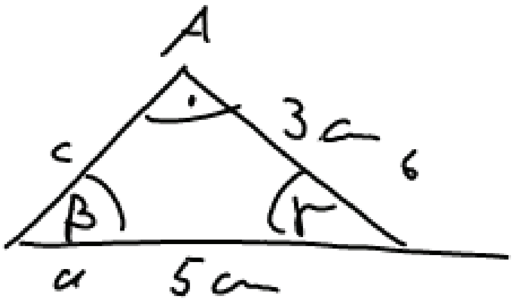
$$= \cos(2{,}5x)$$

II.



$\cot(x) = \dfrac{\cos(x)}{\underbrace{\sin(x)}_{0}}$

III.

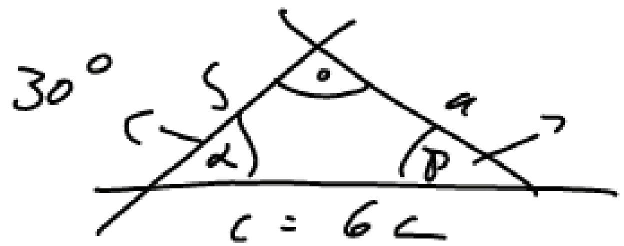
a) 

$5^2 = 3^2 + c^2$

$c^2 = \sqrt{25-9} = \sqrt{16} = 4$

$\sin\beta = 3/5 \qquad \beta = \arcsin(3/5)$

$\sin\gamma = 4/5 \qquad \gamma = \arcsin(4/5)$

b) 

$\beta = 180° - 90° - 30° = 60°$

$\cos(30°) = b/c$

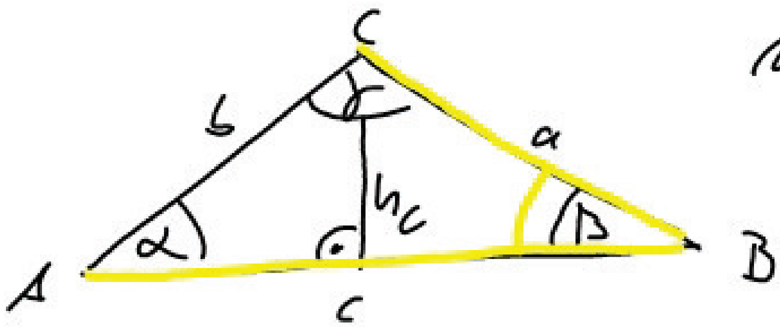
$b = 6 \cdot \cos(30°)$

$\cos(60°) = a/c$

$a = 6 \cdot \cos(60°)$

IV

$a = 8\,dm \qquad c = 9{,}1\,dm \qquad \beta = 20^\circ$



$U = a + b + c = 20{,}26$

$A = \frac{1}{2} \cdot 9{,}1 \cdot 2{,}73$

$12{,}45$

$b^2 = a^2 + c^2 - 2 \cdot a \cdot c \cdot \cos(\beta) = 3{,}16$

$\frac{\sin \beta}{b} = \frac{\sin \alpha}{a}$

$\alpha = \arcsin\left(\frac{\sin \beta}{b} \cdot a\right)$

$\alpha = 59{,}98 = 60^\circ$

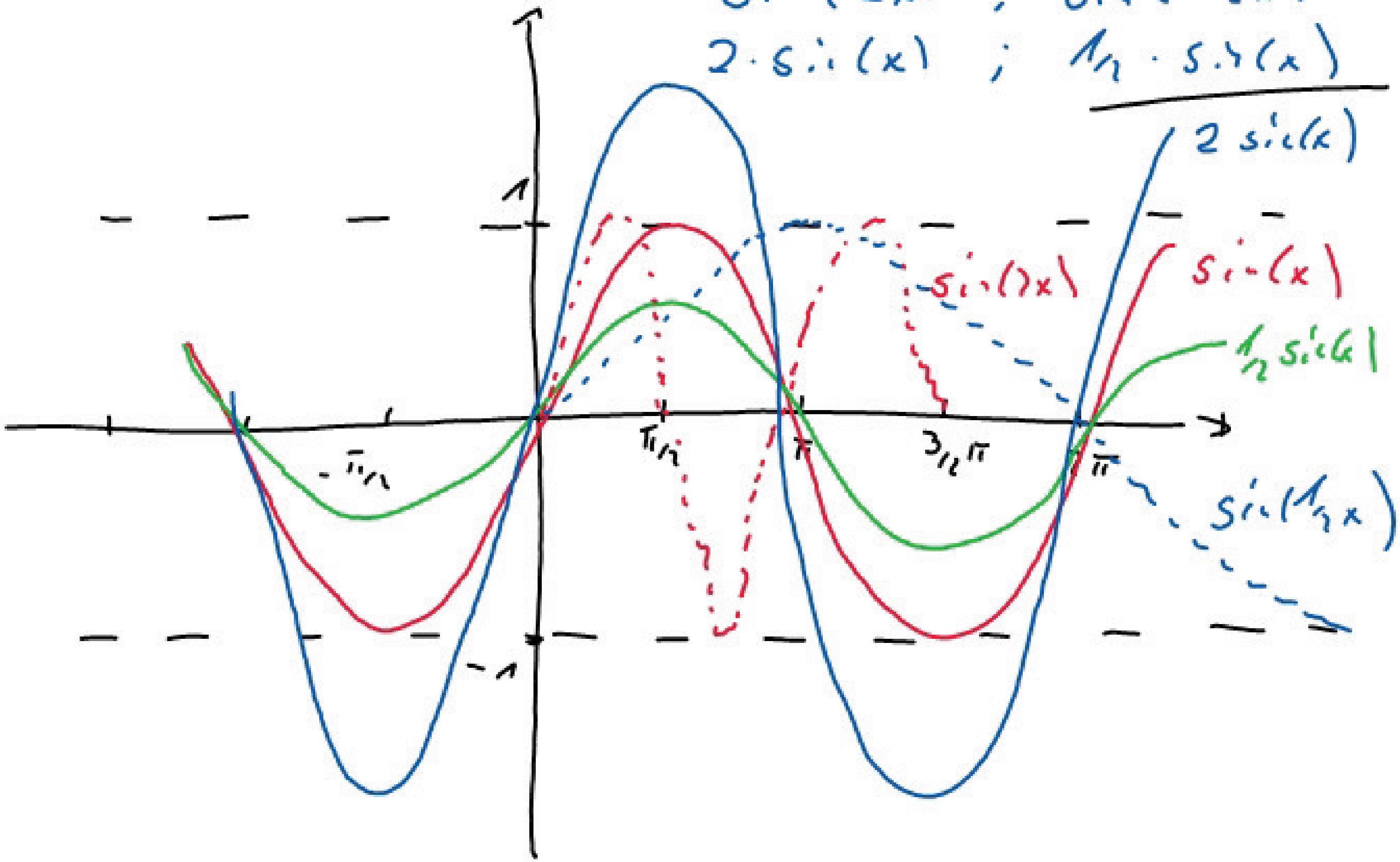
$\gamma = 100^\circ$

$\sin \beta = \frac{h_c}{a}$

$h_c = a \cdot \sin \beta = 2{,}73$

$\sin(2x)$; $\sin(\frac{1}{2}x)$

$2 \cdot \sin(x)$; $\frac{1}{2} \cdot \sin(x)$



$$f(x) = 3 - 2 \cdot \sin(4x - 5\pi)$$

$$f(x) = 3 - 2\cdot \underbrace{\sin(4x - 5\pi)}_{\sin(4x)\cdot \underbrace{\cos(5\pi)}_{-1} - \cos(4x)\cdot \underbrace{\sin(5\pi)}_{0}}$$

$$f(x) = 3 + 2\cdot \sin(4x)$$

Ww: $3 + 2\cdot [-1; 1] = 3 + [-2; 2] \Rightarrow y \in [1; 5]$

Periode: $P_{neu} = \frac{2\pi}{4} = \frac{\pi}{2}$ $\quad f(x) = f(x + \pi/2)$

$$f(x + \pi/2) = 3 + 2\cdot \sin[4\cdot(x + \pi/2)] = 3 + 2\cdot \sin(4x + 2\pi)$$

$$= 3 + 2\cdot [\sin(4x)\cdot \underbrace{\cos(2\pi)}_{1} + \cos(4x)\cdot \underbrace{\sin(2\pi)}_{0}]$$

$$= 3 + 2\cdot \sin(4x) = f(x)$$

$f(x) = 3 + 2 \cdot \sin(4x)$ Punktsymmetrisch $(0|3)$

$f(x) - 3 = -[f(-x) - 3]$

$2 \cdot \sin(4x) = -(2 \cdot \sin(-4x))$

$= -(-2 \cdot \sin(4x))$

$= 2 \cdot \sin(4x)$