$\sin 570^\circ =$

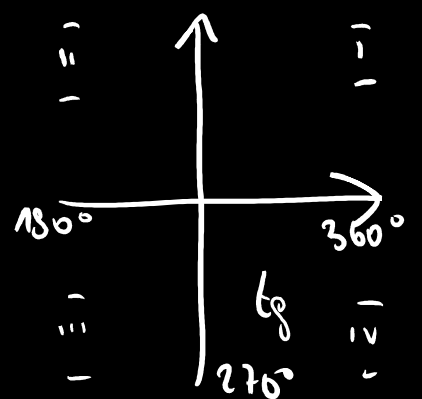
$= \sin(360^\circ + 210^\circ) =$ 0,5 pkt

$= \sin 210^\circ =$

$= \sin(180^\circ + 30^\circ) =$

$= -\sin 30^\circ =$

$= -\frac{1}{2}$ 0,5 pkt



$\operatorname{tg}(-330^\circ) =$ 0,5 pkt

$= -\operatorname{tg} 330^\circ =$

$= -\operatorname{tg}(360^\circ - 30^\circ) =$

$= \operatorname{tg} 30^\circ =$

$= \frac{\sqrt{3}}{3}$ 0,5 pkt

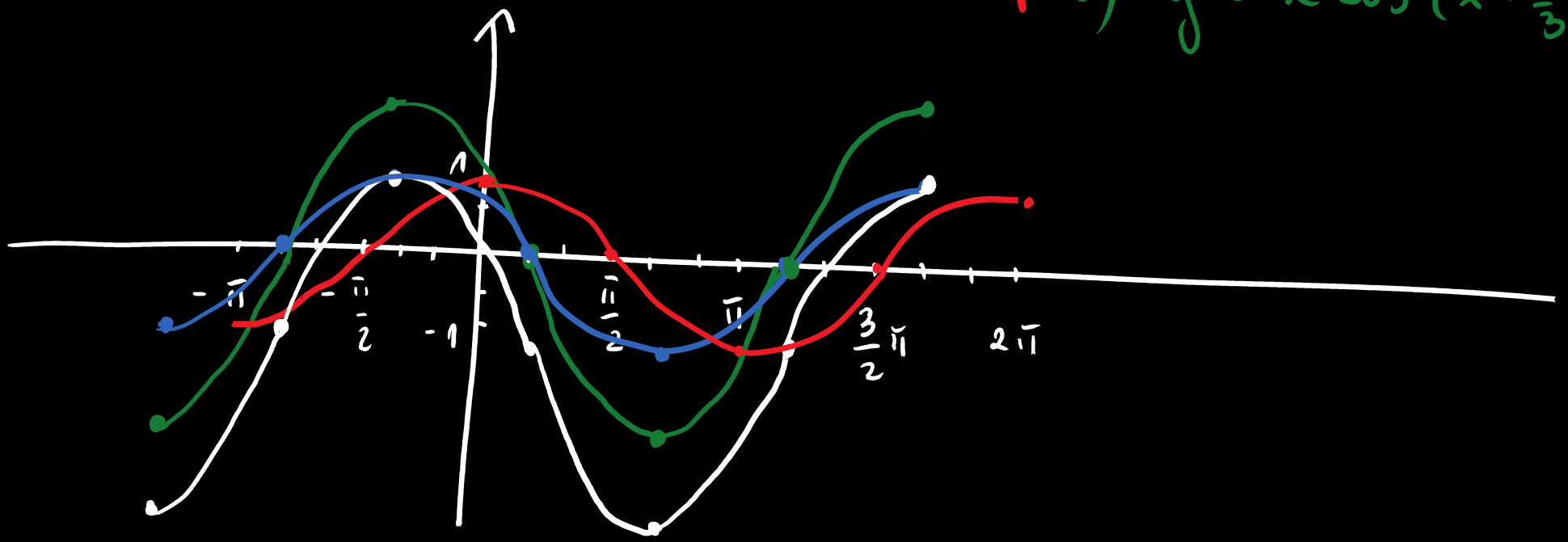
4) $f(x) = 2 \cdot \cos\left(x + \frac{\pi}{3}\right) - 1$ 1↓

0,5 plut

0,5 plut 1) $y = \cos x$

0,5 plut 2) $y = \cos\left(x + \frac{\pi}{3}\right)$ $\frac{\pi}{3}$ ←

0,5 plut 3) $y = 2 \cdot \cos\left(x + \frac{\pi}{3}\right)$



$$2\cos^2 x \operatorname{tg} x + 1 = (\sin x + \cos x)^2 \qquad \operatorname{tg} x = \frac{\sin x}{\cos x}$$

$$L = 2\cos^2 x \operatorname{tg} x + 1 = 2\cos^2 x \cdot \frac{\sin x}{\cos x} + 1 = \quad (0{,}5\text{ pkt})$$

$$= 2\cos x \cdot \sin x + 1 = 2\cos x \cdot \sin x + \sin^2 x + \cos^2 x = \quad (0{,}5\text{ pkt})$$

$$= \sin^2 x + 2\sin x \cos x + \cos^2 x =$$

a^2 $\quad 2ab$ $\quad b^2$

$$= (\sin x + \cos x)^2 = P \qquad 1\text{ pkt}$$

$$P = (\sin x + \cos x)^2 = \sin^2 x + 2\sin x \cos x + \cos^2 x$$

$$L = P$$

$$\cos 75^\circ = \cos\left(\overset{\alpha}{30^\circ} + \overset{\beta}{45^\circ}\right) = \quad \cos(\alpha+\beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$$

1 pkt

$$= \cos 30^\circ \cdot \cos 45^\circ - \sin 30^\circ \cdot \sin 45^\circ =$$

$$= \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2} - \frac{1}{2} \cdot \frac{\sqrt{2}}{2} =$$

$$= \frac{\sqrt{6}}{4} - \frac{\sqrt{2}}{4} = \frac{\sqrt{6} - \sqrt{2}}{4}$$

1 pkt

$$2\sin\left(2x-\frac{\pi}{6}\right)=1 \quad /:2$$

$$\sin\left(\underbrace{2x-\frac{\pi}{6}}_{\alpha}\right)=\frac{1}{2}$$

$$\sin\alpha=\frac{1}{2}$$

$$\alpha=30^\circ=\frac{\pi}{6}$$

$k\in\mathbb{C}$

$$2x-\frac{\pi}{6}=\frac{\pi}{6}+2k\pi \qquad 0{,}5\text{ pkt}$$

$$2x=1\cdot\pi+\frac{\pi}{6}+2k\pi$$

$$2x=1\frac{1}{6}\pi+2k\pi$$

$$2x=\frac{7}{6}\pi+2k\pi \quad /\cdot\frac{1}{2}$$

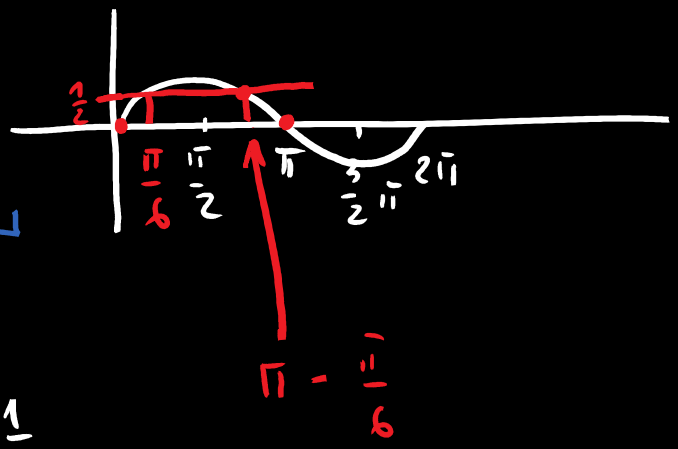
$$x=\frac{7}{12}\pi+k\pi \qquad 0{,}5\text{ pkt}$$

$$2x-\frac{\pi}{6}=1\pi-\frac{\pi}{6}+2k\pi \qquad 0{,}5\text{ pkt}$$

$$2x=\pi+\frac{5}{6}\pi+2k\pi$$

$$2x=\frac{11}{6}\pi+2k\pi \quad /\ \frac{1}{2}$$

$$x=\frac{11}{12}\pi+k\pi \qquad 0{,}5\text{ pkt}$$



$$\sin^2 x - \sin x - 2 = 0$$

$t = \sin x$ — 0,5 plt

$t \in \langle -1, 1 \rangle$

$$t^2 - t - 2 = 0$$

$$\Delta = (-1)^2 - 4 \cdot 1 \cdot (-2)$$

$$\Delta = 9$$

$$\sqrt{\Delta} = 3$$

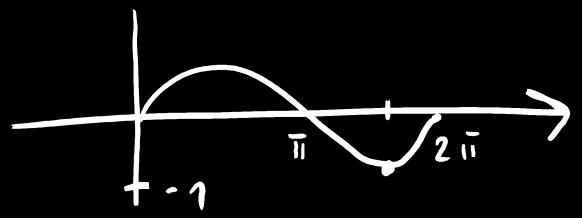
$$t_1 = \frac{-b - \sqrt{\Delta}}{2a} = \frac{1 - 3}{2} = -1$$ 0,5 plt

$$t_2 = \frac{-b + \sqrt{\Delta}}{2a} = \frac{1 + 3}{2} = 2$$ sprz. 0,5 plt

$$-1 = \sin x$$

$$\sin x = -1$$

0,5 plt $x = \frac{3}{2}\pi + 2k\pi, \; k \in \mathbb{C}$



0 - 4 nobst

4,5 - 5,5 dop

6 - 8 dst

8,5 - 10 db

10,5 - 12 3db

$$1 + \sin 2x = \cos 2x$$

$$\sin 2x = 2\sin x \cos x$$

$$\cos 2x = \cos^2 x - \sin^2 x$$

$$1 + 2\sin x \cos x = \cos^2 x - \sin^2 x$$

$$\sin^2 x + \cos^2 x + 2\sin x \cos x = \cos^2 x - \sin^2 x$$

$$2\sin^2 x + 2\sin x \cos x = 0 \quad / : 2$$

$$\sin^2 x + \sin x \cos x = 0$$

$$\sin x \cdot (\sin x + \cos x) = 0$$

$$\Downarrow \qquad \Downarrow$$

$$\sin x = 0 \qquad \sin x + \cos x = 0$$

$$x = 0 + k\pi \qquad \sin x = -\cos x$$

$$x = k\pi, \; k \in \mathbb{Z}$$