05.03.19

$$\sin(15°) = \sin(45° - 30°)$$
$$= \sin(45°)\cos(30°) - \cos(45°)\sin(30°)$$
$$= \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{2} \cdot \frac{1}{2}$$
$$= \frac{\sqrt{6}}{4} - \frac{\sqrt{2}}{4} = \frac{\sqrt{6} - \sqrt{2}}{4}$$

$$\cos(15°) = \frac{\sqrt{6} + \sqrt{2}}{4}$$ (A calculer)

$\cos(7{,}5°)$: $\cos(2 \cdot 7{,}5°) = 2\cos^2(7{,}5°) - 1$

$$\frac{\sqrt{6} + \sqrt{2}}{4} + 1 = 2\cos^2(7{,}5°)$$

$$\frac{\sqrt{6} + \sqrt{2} + 4}{8} = \cos^2(7{,}5°)$$

$0 < \cos(7{,}5°) < 1$: $\cos(7{,}5°) = \sqrt{\frac{\sqrt{6} + \sqrt{2} + 4}{8}}$

Formules (suite)

6) $$\sin(2\alpha) = \sin(\alpha + \alpha)$$
$$= \sin(\alpha)\cos(\alpha) + \sin(\alpha)\cos(\alpha)$$
$$= 2\sin(\alpha)\cos(\alpha)$$

$$\boxed{\sin(2\alpha) = 2\sin(\alpha)\cos(\alpha)}$$

7) $$\tan(\alpha - \beta) = \frac{\sin(\alpha-\beta)}{\cos(\alpha-\beta)}$$

$$= \frac{\sin(\alpha)\cos(\beta) - \sin(\beta)\cos(\alpha)}{\cos(\alpha)\cos(\beta) + \sin(\alpha)\sin(\beta)}$$

$$= \frac{\dfrac{\sin(\alpha)\cancel{\cos(\beta)}}{\cos(\alpha)\cancel{\cos(\beta)}} - \dfrac{\sin(\beta)\cancel{\cos(\alpha)}}{\cancel{\cos(\alpha)}\cos(\beta)}}{1 + \dfrac{\sin(\alpha)\sin(\beta)}{\cos(\alpha)\cos(\beta)}} = \frac{\tan(\alpha) - \tan(\beta)}{1 + \tan(\alpha)\tan(\beta)}$$

$$\boxed{\tan(\alpha-\beta) = \frac{\tan(\alpha) - \tan(\beta)}{1 + \tan(\alpha)\tan(\beta)}}$$

4.3.3 Résoudre les équations suivantes en donnant les solutions en degrés.

a) $\cos(t) = -\frac{1}{2}$

b) $\sin(t) = 0.829$

c) $\tan(t) = -0.754$

d) $\cos(t) = -1.43$

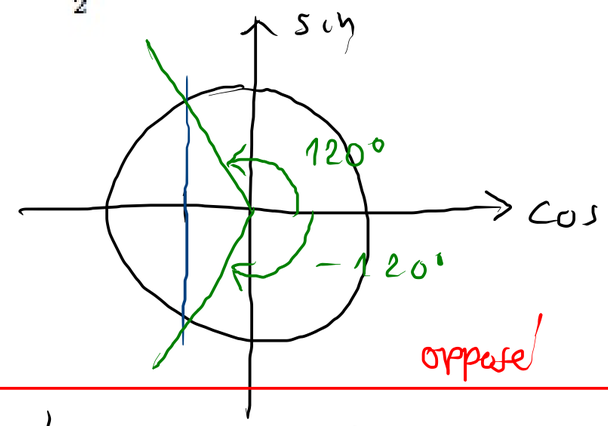
e) $\tan(t) = 5.33$

f) $\sin(3\,t) = -\frac{\sqrt{3}}{2}$

g) $\tan(5\,t) = 3.273$

h) $\cos\left(\frac{t}{2}\right) = -\frac{1}{2}$

a) $\cos(t) = -\frac{1}{2}$



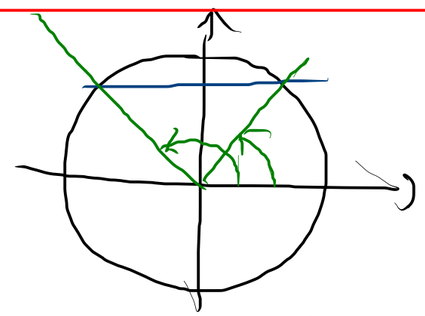
$\boxed{\text{TI}}$ $t = 120°$

oppose

$$\boxed{t = 120° + k \cdot 360° \quad \underline{\text{ou}} \quad t = -120° + k \cdot 360°}$$

$k \in \mathbb{Z}$

b) $\sin(t) = 0.829$



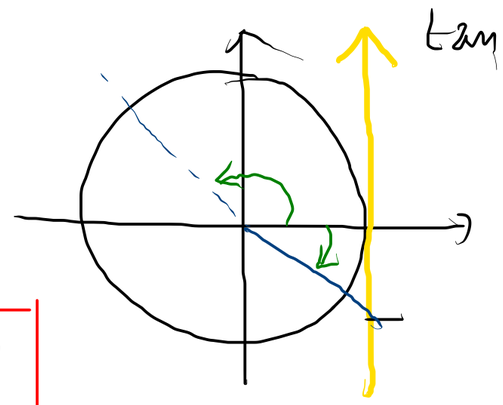
$\boxed{\text{TI}}$ $t \cong 56°$

supp

$180° - 56°$

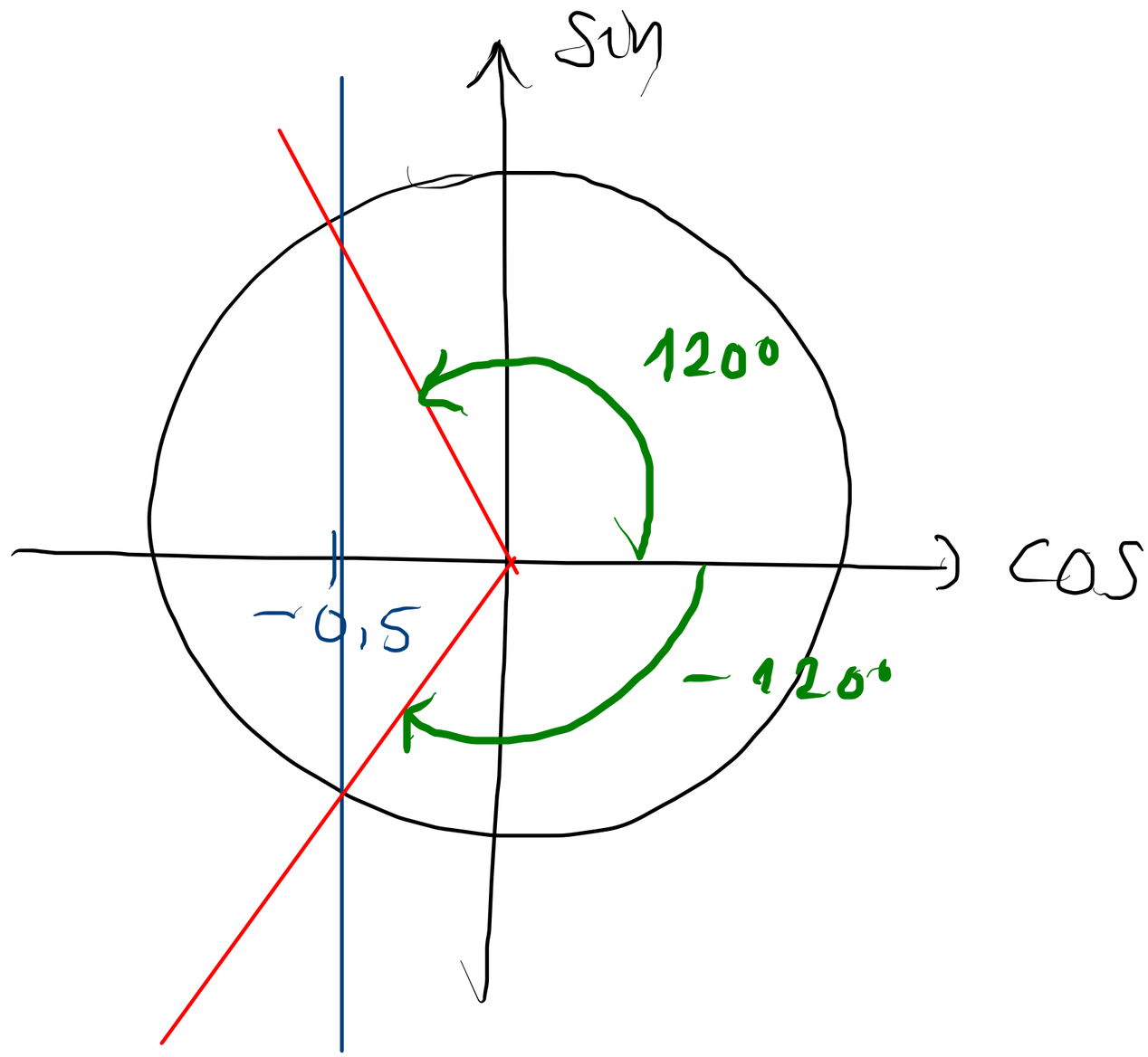
$$\boxed{t \cong 56° + k \cdot 360° \quad \underline{\text{ou}} \quad t = 124° + k \cdot 360°}$$

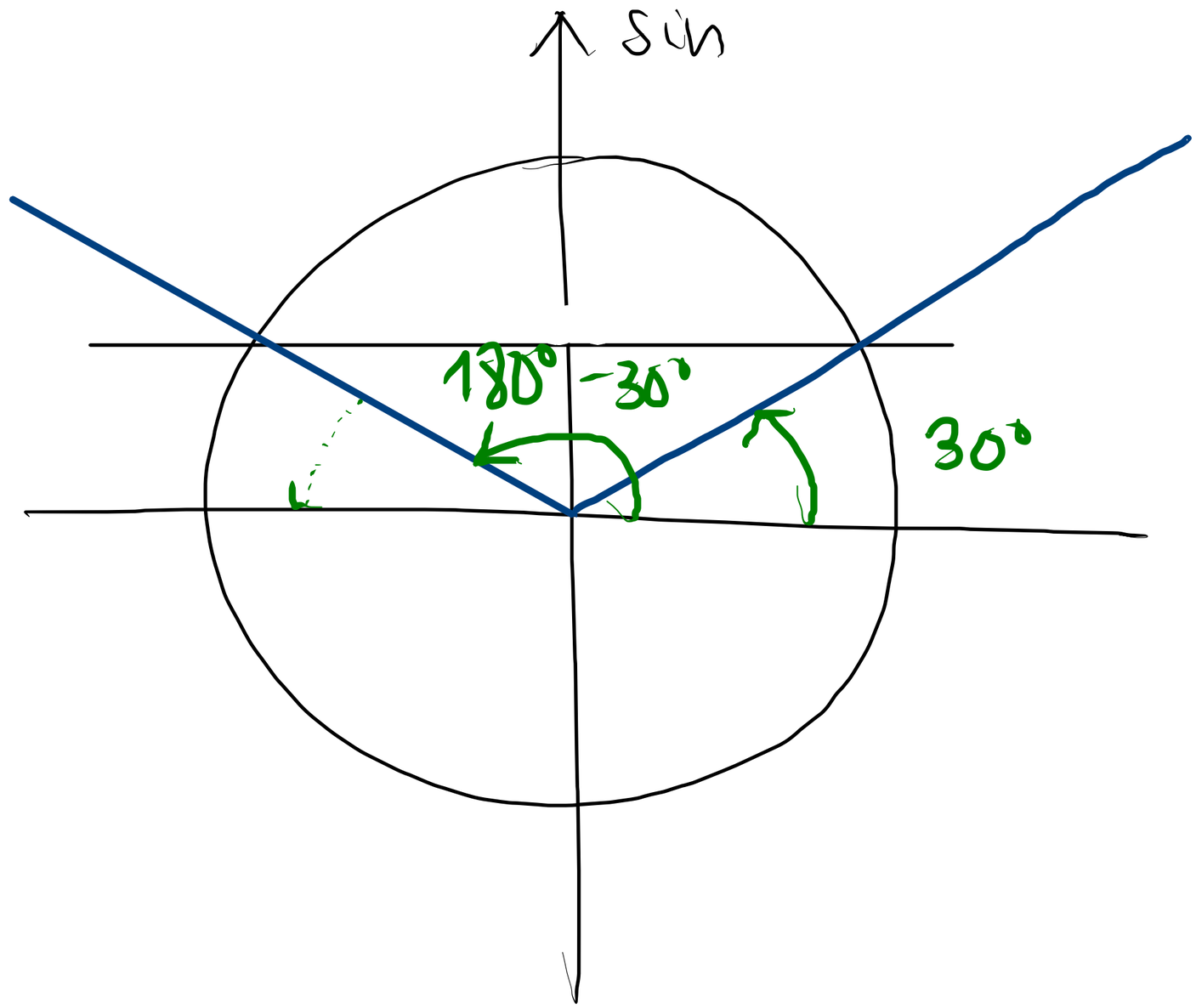
c) $\tan(t) = -0{,}754$



$\boxed{\text{TI}}$ $t \cong -37°$

$$\boxed{t \cong -37° + k \cdot 180°}$$


sin
cos
120°
-120°
-0,5


sin
180°
-30°
30°