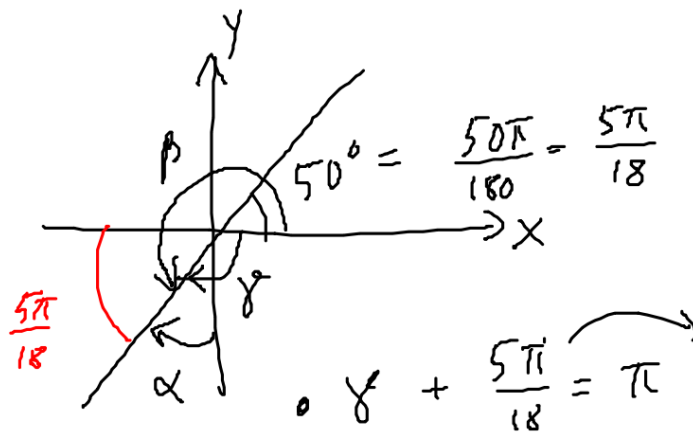


Radianit

$$\pi = 180^\circ$$

$$\rightarrow 1^\circ = \frac{\pi}{180}$$

204. a)



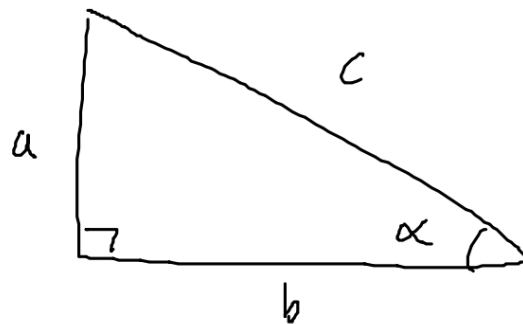
$$\gamma = \frac{13}{18}\pi$$

$$\alpha + \frac{5\pi}{18} = \frac{\pi}{2}$$

$$\alpha = \frac{4}{18}\pi = \frac{2}{9}\pi$$

$$\beta + \gamma = 2\pi \rightarrow \beta = \frac{23}{18}\pi$$

Kertaus:



$$\sin \alpha = \frac{a}{c}$$

$$\cos \alpha = \frac{b}{c}$$

$$\tan \alpha = \frac{a}{b}$$

$$\alpha = \sin^{-1} \left(\frac{a}{c} \right)$$

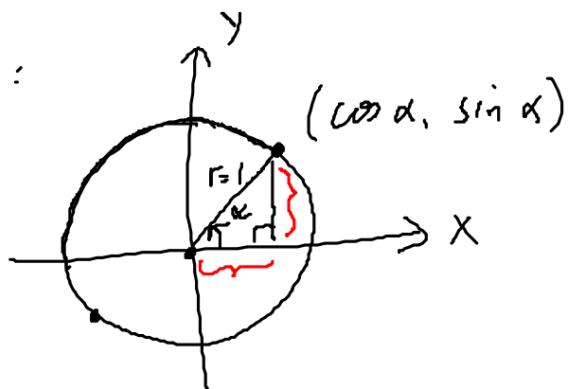
$$\alpha = \cos^{-1} \left(\frac{b}{c} \right)$$

$$\alpha = \tan^{-1} \left(\frac{a}{b} \right)$$

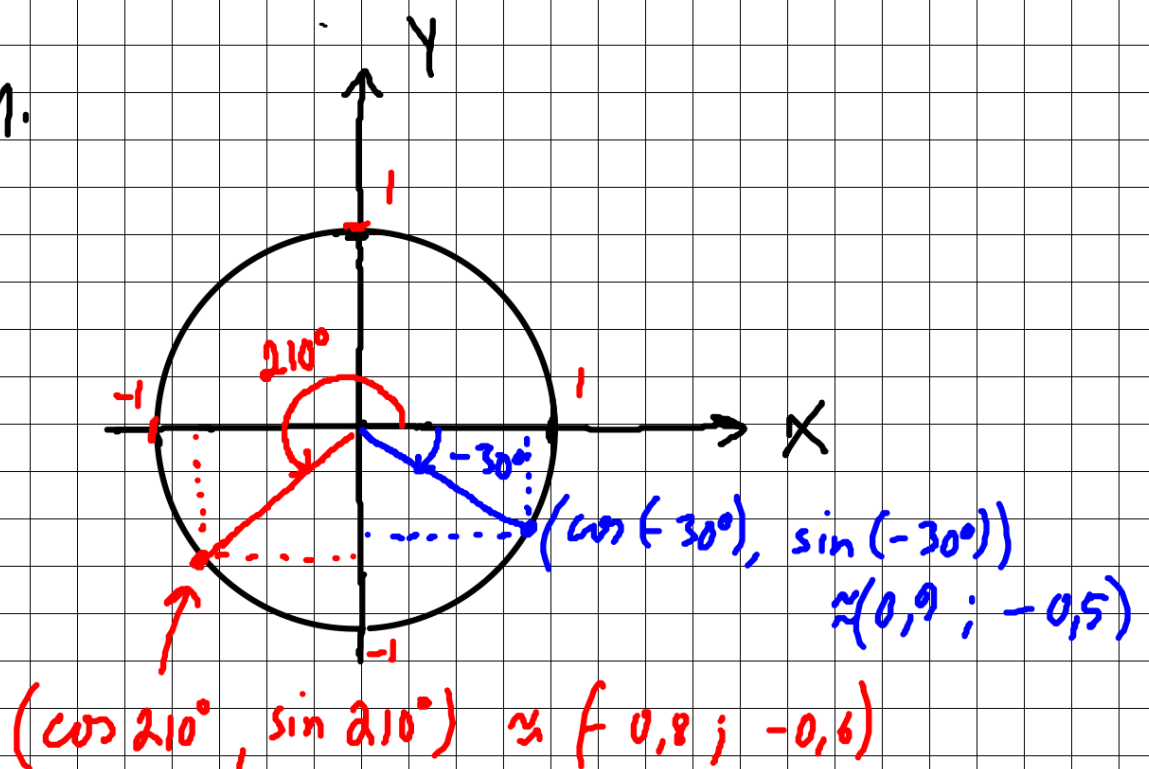
yksikön ympyrä:

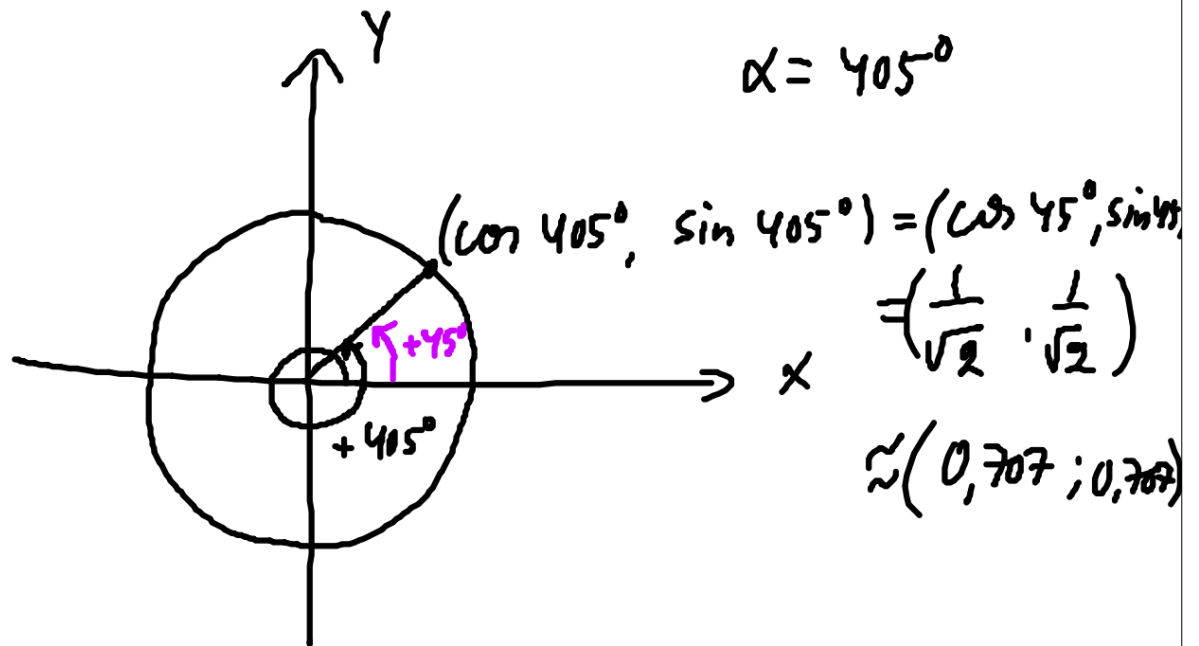
$$k_p = (0, 0)$$

$$r = 1$$



Esim.





$x\text{-koord} = \cos \alpha$ $y\text{-koord} = \sin \alpha$
--

213.

$$a) \sin \frac{\pi}{4} + (\sin \pi)^2 - \sin \frac{3\pi}{4}$$

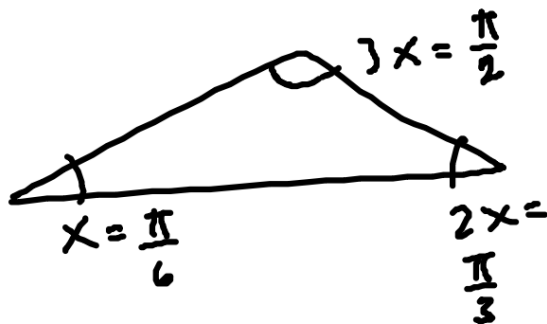
Symbolisella lauseella: $\sin^2 x = (\sin x)^2$

$$= \frac{1}{\sqrt{2}} + (0)^2 - \frac{1}{\sqrt{2}} = 0$$

$$b) \frac{\sin \frac{\pi}{3} + \cos \frac{\pi}{2}}{\cos \frac{\pi}{4} - \sin \frac{5\pi}{6}} = \frac{\frac{\sqrt{3}}{2} + 0}{\frac{1}{\sqrt{2}} - \frac{1}{2}} = \frac{\frac{\sqrt{3}}{2}}{\frac{\sqrt{2}-1}{2}} =$$

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

224.



$$\begin{aligned} x + 2x + 3x &= \pi \\ 6x &= \pi \quad || : 6 \\ x &= \frac{\pi}{6} \end{aligned}$$

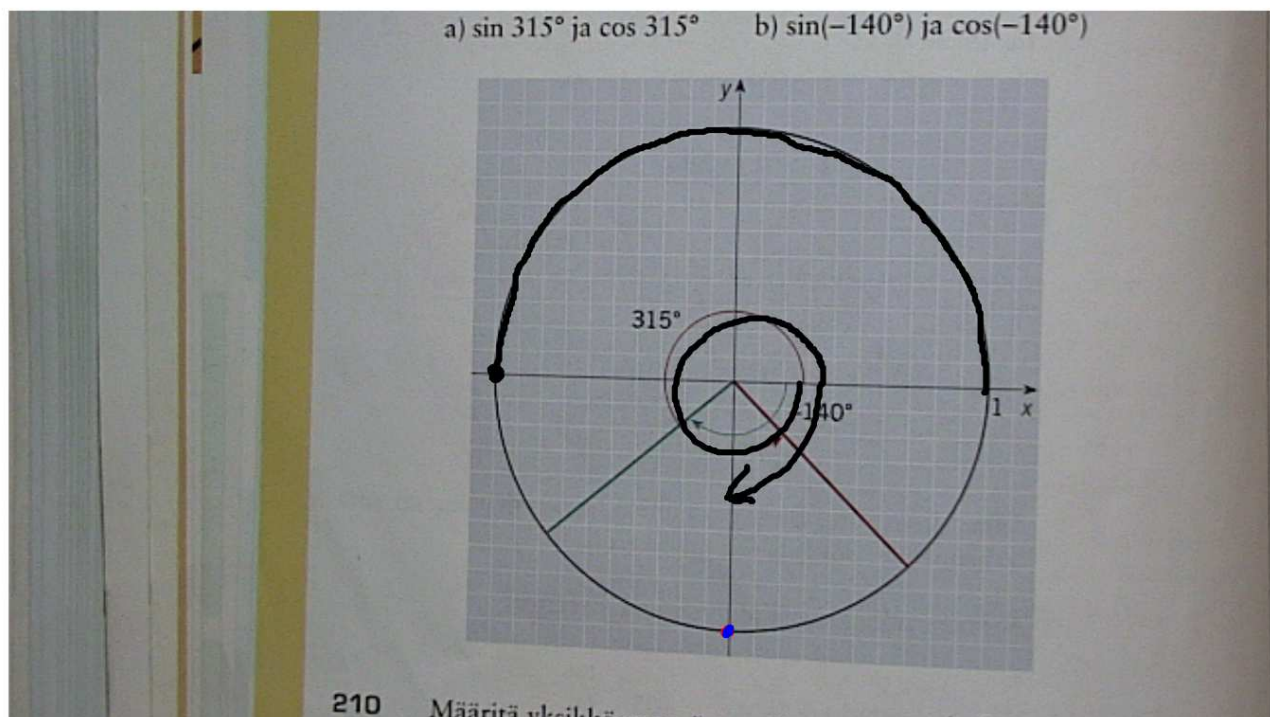
$$(\sin x + \sin 2x + \sin 3x)^2 =$$

$$\left(\sin \frac{\pi}{6} + \sin \frac{\pi}{3} + \sin \frac{\pi}{2} \right)^2 =$$

$$\left(\begin{array}{ccc} \downarrow & \downarrow & \downarrow \\ \frac{1}{2} & + \frac{\sqrt{3}}{2} & + 1 \end{array} \right)^2 = \left(\frac{3+\sqrt{3}}{2} \right)^2 = \frac{9+6\sqrt{3}+3}{4}$$

$$= \frac{12+6\sqrt{3}}{4}$$

210. Katso vastaukset s. 18 kuviossa



a) $\sin \pi = \sin 180^\circ = 0$

b) $\cos\left(-\frac{5\pi}{2}\right) = \cos\left(-\frac{\pi}{2}\right) = 0$

s. 18:
209,212
214,219,
222

