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$f(x) = 3\cos x + 4 \operatorname{sen} x$

$f(x) = A\cos(x - \alpha) \qquad 0 < \alpha < \frac{\pi}{2}$

- $\operatorname{tg}\alpha = ?$
- grafico γ $\quad I[-\pi; \pi]$
- determina n. soluzioni di $f(x) = 2$ in I

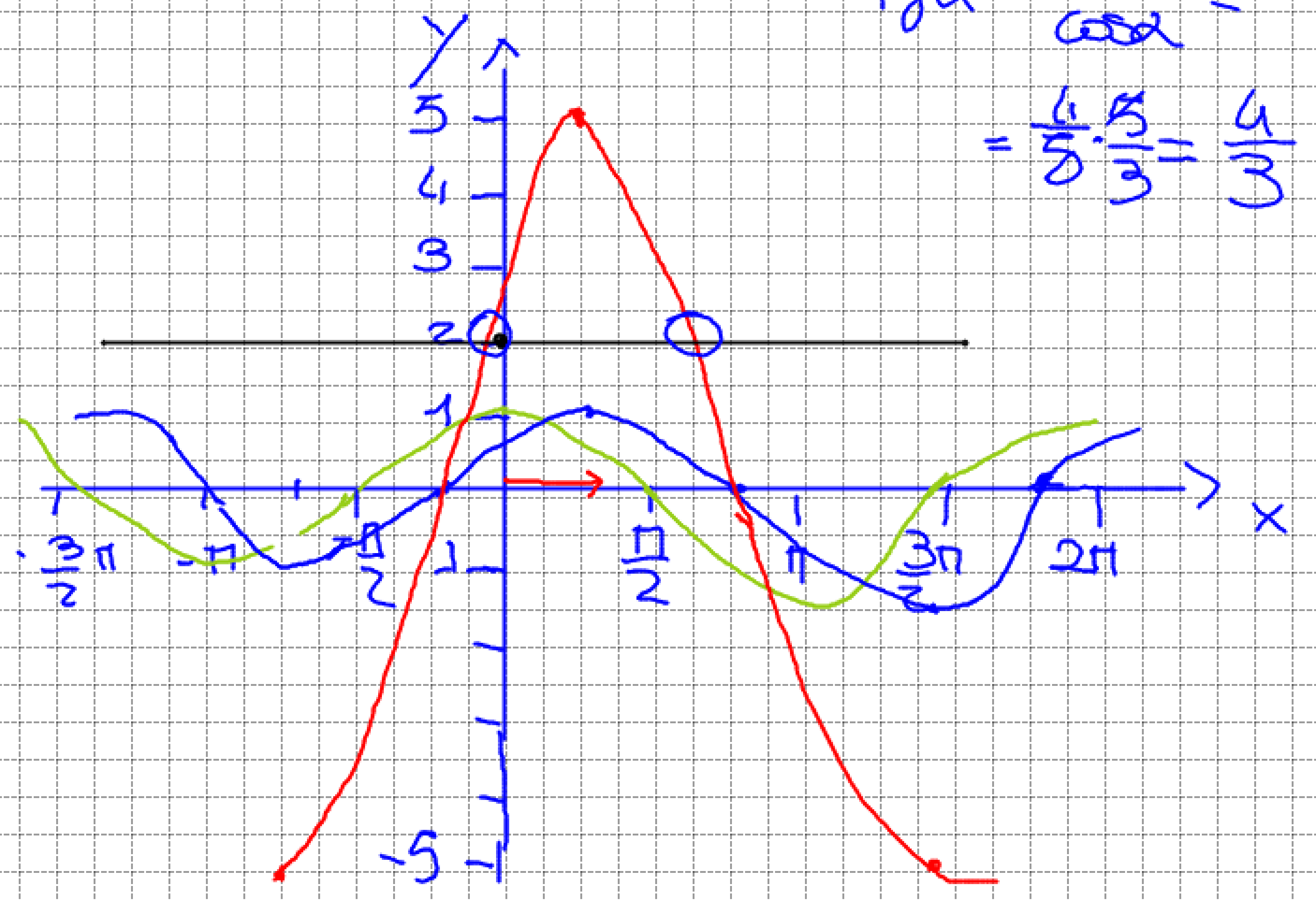
$y = 3\cos x + 4 \operatorname{sen} x \qquad a = 3 \quad b = 4$

$\sqrt{a^2+b^2} = \sqrt{9+16} = \sqrt{25} = 5$

$y = 5\left(\frac{3}{5}\cos x + \frac{4}{5}\operatorname{sen} x\right) \qquad \begin{cases} \cos\alpha = \frac{3}{5} \\ \operatorname{sen}\alpha = \frac{4}{5} \end{cases}$

$\gamma: y = 5\cos(x - \alpha) \qquad \alpha \rightarrow \alpha = 53° 7' 48''$

$\operatorname{tg}\alpha = \frac{\operatorname{sen}\alpha}{\cos\alpha} = \frac{4}{5} \cdot \frac{5}{3} = \frac{4}{3}$



$g(x) = \frac{10}{3\cos x + 4 \operatorname{sen} x + 7} \qquad D = ? \qquad T = ? \quad g(0) = ?$

$\min = ? \quad \max = ?$

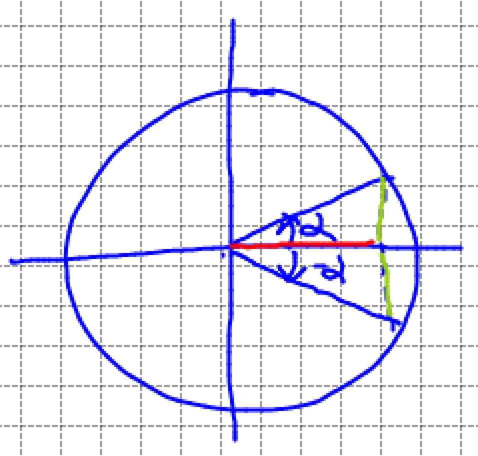
$g(x) = \frac{10}{\underbrace{5\cos(x-\alpha)}_{X} + 7} \qquad D \rightarrow 5\cos(x-\alpha) + 7 \neq 0$

$\cos(x-\alpha) \neq -\frac{7}{5}$

$\cos \alpha x \qquad D = \mathbb{R}$

$T = \frac{2\pi}{\alpha} \qquad T = 2\pi$

$g(0) = \frac{10}{5\cos(-\alpha) + 7}$



$g(0) = 1$

$5\cos(-\alpha) = 5\cos\alpha$

$5\operatorname{sen}(-\alpha) = -5\operatorname{sen}\alpha$

$\text{MIN} = c - \sqrt{a^2+b^2} = 7 - 5 = 2$

$g(x) = \frac{10}{5\cos(x-\alpha)+7} \qquad \alpha = 53° 7' 42''$

$$-1 < \cos(x-2) < 1$$

$$-5 < 5\cos(x-2) < 5$$

$$2 < 5\cos(x-2)+7 < 12$$

$$\frac{1}{12} < \frac{1}{5\cos(x-2)+7} < \frac{1}{2}$$

$$\frac{5}{6}\,\frac{\cancel{10}}{\cancel{12}} < \frac{10}{5\cos(x-2)+7} < \frac{\cancel{10}}{\cancel{2}}^{\,5}$$

$$1\;\frac{\cancel{2}}{\cancel{2}} < \frac{5\cos(x-2)+7}{2}$$

$$\frac{1}{5\cos(x-2)+7} < \frac{\cancel{5\cos(x-2)+7}}{2\left(\cancel{5\cos(x-2)+7}\right)}$$

$$\frac{1}{5\cos(x-2)+7} < \frac{1}{2}$$