21/9/2016

233 $\frac{1}{2}\cos\alpha + \frac{\tan^2\alpha}{1+\tan^2\alpha} - \sin^2\alpha + \frac{1}{2}\cdot\frac{\sin^2\alpha}{\cos\alpha\tan^2\alpha} =$

$$= \frac{1}{2}\cos\alpha + \frac{\frac{\sin^2\alpha}{\cos^2\alpha}}{1+\frac{\sin^2\alpha}{\cos^2\alpha}} - \sin^2\alpha + \frac{1}{2}\cdot\frac{\cancel{\sin^2\alpha}}{\cancel{\cos\alpha}\cdot\frac{\cancel{\sin^2\alpha}}{\cancel{\cos^2\alpha}}} =$$

$$= \frac{1}{2}\cos\alpha + \frac{\frac{\sin^2\alpha}{\cancel{\cos^2\alpha}}}{\frac{\cos^2\alpha+\sin^2\alpha}{\cancel{\cos^2\alpha}}} - \sin^2\alpha + \frac{1}{2}\cdot\cos\alpha =$$

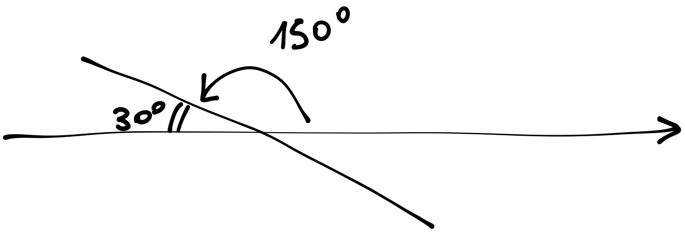
$$= \frac{1}{2}\cos\alpha + \cancel{\frac{\sin^2\alpha}{\underbrace{\cos^2\alpha+\sin^2\alpha}_{1}}} \cancel{- \sin^2\alpha} + \frac{1}{2}\cos\alpha = \boxed{\cos\alpha}$$

254 Considera il fascio di rette di equazione $y = (k+2)x + k - 1$, con $k \in \mathbb{R}$, e determina:

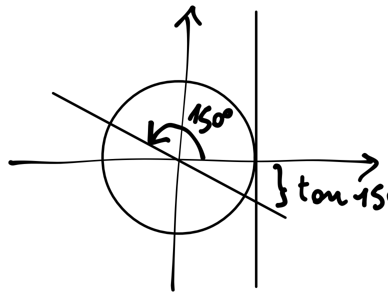
a. la retta inclinata di 150° rispetto all'asse x;

b. le rette che hanno inclinazione compresa fra $\frac{\pi}{4}$ e $\frac{\pi}{3}$. $\left[\text{a) } y = -\frac{\sqrt{3}}{3}x - 3 - \frac{\sqrt{3}}{3}; \text{ b) } -1 \le k \le \sqrt{3} - 2\right]$

a)



$$m = \tan 150° = -\frac{\sqrt{3}}{3}$$



$\tan 150° = -\tan 30°$

$$y = (k+2)x + k - 1$$

$$k + 2 = -\frac{\sqrt{3}}{3} \qquad k = -\frac{\sqrt{3}}{3} - 2$$

$$\boxed{y = -\frac{\sqrt{3}}{3}x - 3 - \frac{\sqrt{3}}{3}}$$

b) inclinazione compresa tra $\frac{\pi}{4}$ e $\frac{\pi}{3}$ $\rightsquigarrow$ $\frac{\pi}{4} \le \alpha \le \frac{\pi}{3}$

$$\Downarrow$$

$$\tan\frac{\pi}{4} \le m \le \tan\frac{\pi}{3}$$

$$1 \le m \le \sqrt{3}$$

$$1 \le k+2 \le \sqrt{3}$$

$$1-2 \le k \le \sqrt{3} - 2$$

$$-1 \le k \le \sqrt{3} - 2$$

COTANGENTE, SECANTE, COSECANTE

COTANGENTE

$$\cot\alpha = \frac{\cos\alpha}{\sin\alpha} \qquad \alpha \neq k\pi \qquad k \in \mathbb{Z}$$

A volte può essere utile scrivere $\cot\alpha = \frac{1}{\tan\alpha}$ $\quad \alpha \neq k\frac{\pi}{2}$ $\quad k \in \mathbb{Z}$

SECANTE

$$\sec\alpha = \frac{1}{\cos\alpha} \qquad \alpha \neq \frac{\pi}{2} + k\pi \qquad k \in \mathbb{Z}$$

COSECANTE

$$\csc\alpha = \frac{1}{\sin\alpha} \qquad \alpha \neq k\pi \qquad k \in \mathbb{Z}$$