



Ministero dell'Istruzione

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CLASSE 4^A A LICEO SCIENTIFICO

25 Novembre 2020

Funzioni goniometriche

COGNOME _____ NOME _____

Semplifica le seguenti espressioni:

1. $\cos \alpha (1 - \tan \alpha) + \sin \alpha (1 - \cot \alpha)$ _____ / 5

2. $(\sin^2 \alpha + \tan^2 \alpha) \cdot \csc^2 \alpha - \frac{\cot^2 \alpha + \csc^2 \alpha}{\cot^2 \alpha} + 1$ _____ / 8

3. $\left(1 + \frac{\sec(-\alpha)}{\csc(\pi-\alpha)}\right)^2 \cdot \frac{\csc^2 \alpha}{\sec^2\left(\frac{\pi}{2}-\alpha\right) + 2 \sec \alpha \csc \alpha + \csc^2\left(\frac{\pi}{2}-\alpha\right)} + 1$ _____ / 12

4. $\cos^4 \alpha + \sin^4 \alpha + 2 + 2 \left(\frac{\sin \alpha}{\sec \alpha}\right)^2$ _____ / 4

5. $2 \cdot \left(\cos^2 \frac{\pi}{4} - \sin \frac{7}{6} \pi\right)^3 - \left(\sqrt{3} \tan \frac{\pi}{3} - \cos 2\pi\right)^4 + 9 \cdot \left(2 \cos \frac{\pi}{4} - 3 \sin \frac{\pi}{4}\right)^{-2}$ _____ / 9

6. Calcola: $\cos\left(\arcsin \frac{5}{13}\right)$ _____ / 4

7. Sapendo che $\tan \alpha = \frac{3}{4}$ con $\pi < \alpha < \frac{3}{2}\pi$, calcola $\sin \alpha$ e $\cos \alpha$. _____ / 5

Determina i valori del parametro k in modo tale che siano verificate le seguenti uguaglianze:

8. $-(2 + k^2) \sin x - k = 2$ con $\frac{3}{2}\pi < x < 2\pi$ _____ / 7

9. $\sec x = \frac{k}{k+1}$ con $0 < x < \frac{\pi}{2}$ _____ / 4

10. $\arcsin \cot \frac{2k+1}{k} = \frac{3}{4}\pi$ _____ / 2

11. Calcola $\cos\left(\arcsin \sqrt{1-x^2}\right)$. _____ / 5

12. Verifica la seguente identità: _____ / 8

$$\frac{\cos \alpha}{\cos \alpha - 2} + \frac{\cos^2 \alpha + 5 \cos \alpha}{\sin^2 \alpha - 7 \cos \alpha - 11} = -\frac{4 \cos \alpha}{4 - \cos^2 \alpha}$$

Stabilisci se le seguenti affermazioni sono vere o false:

_____ / 8

	V	F
$\sqrt{\cos^2 \frac{5}{4}\pi} = \cos \frac{5}{4}\pi$	<input type="checkbox"/>	<input type="checkbox"/>
$2 \sin \frac{\pi}{4} = \sin \frac{\pi}{2}$	<input type="checkbox"/>	<input type="checkbox"/>
$\sin \frac{\pi}{18} = \cos \frac{4}{9}\pi$	<input type="checkbox"/>	<input type="checkbox"/>
$\sqrt{12 \cdot \cos^2 \frac{\pi}{3}} = 3$	<input type="checkbox"/>	<input type="checkbox"/>
$\sin^2 \frac{\pi}{2} = \sin \frac{\pi}{2}$	<input type="checkbox"/>	<input type="checkbox"/>
$\sin \frac{\pi}{4} \cdot \cos \frac{\pi}{4} = \frac{1}{2} \cdot \sin \frac{\pi}{2}$	<input type="checkbox"/>	<input type="checkbox"/>
$\cos \frac{\pi}{3} = \cos \left(-\frac{\pi}{3}\right)$	<input type="checkbox"/>	<input type="checkbox"/>
$\sin \frac{\pi}{3} = \sin \left(-\frac{\pi}{3}\right)$	<input type="checkbox"/>	<input type="checkbox"/>
$\frac{\tan \frac{\pi}{4}}{\sqrt{1 + \tan^2 \frac{\pi}{4}}} = -\sin \frac{\pi}{4}$	<input type="checkbox"/>	<input type="checkbox"/>
$\tan \frac{13}{12}\pi = \cot \frac{5}{12}\pi$	<input type="checkbox"/>	<input type="checkbox"/>
$\cot \frac{13}{12}\pi = \tan \frac{11}{12}\pi$	<input type="checkbox"/>	<input type="checkbox"/>
$\sqrt{\tan^2 \frac{17}{16}\pi} = \tan \frac{17}{16}\pi$	<input type="checkbox"/>	<input type="checkbox"/>
$\arcsin \left(-\frac{1}{2}\right) = \frac{7}{6}\pi$	<input type="checkbox"/>	<input type="checkbox"/>
$\arcsin \left(\frac{\sqrt{2}}{2}\right)^2 = \frac{\pi}{4}$	<input type="checkbox"/>	<input type="checkbox"/>
$\arcsin 1 = \arcsin 0$	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5	6	7	8	9	10
x=0	0<x<13,5	13,5≤x<22,5	22,5≤x<31,5	31,5≤x<43,2	43,2≤x<49,5	49,5≤x<58,5	58,5≤x<67,5	67,5≤x<81	x=81