August 26, 2021

TRIG REVIEW

$$\frac{\cos\frac{4\pi}{3} - \cot^2\left(-\frac{5\pi}{6}\right)}{\sin\frac{3\pi}{2}\sec\frac{15\pi}{4}} = \frac{-\frac{1}{2} - \left(\sqrt{3}\right)^2}{-1 \cdot \sqrt{2}}$$

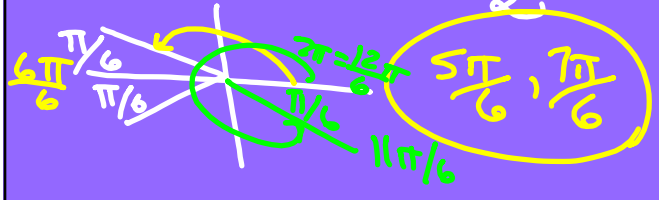
$$= \frac{-\frac{1}{2} - 3}{-\sqrt{2}} = \frac{+\frac{7}{2}\cdot\sqrt{2}}{+\sqrt{2}\cdot\sqrt{2}}$$

$$= \frac{\frac{7\sqrt{2}}{2}}{2} = \frac{7\sqrt{2}}{2}\cdot\frac{1}{2}$$

$$= \frac{7\sqrt{2}}{4}$$

Sin θ, Csc θ	All
tan θ, Cot θ	Cos θ, Sec θ

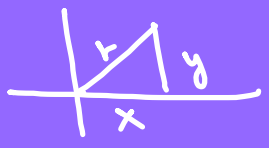
Find all possible angles where $\cos\theta = -\frac{\sqrt{3}}{2}$, $0 < \theta < 2\pi$



$\sin\theta = \frac{y}{r}$ $\quad \csc\theta = \frac{r}{y}$

$\cos\theta = \frac{x}{r}$ $\quad \sec\theta = \frac{r}{x}$

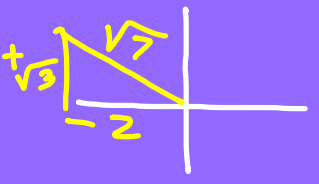
$\tan\theta = \frac{y}{x}$ $\quad \cot\theta = \frac{x}{y}$



Find $\cot\theta$ given

$\sec\theta = -\frac{\sqrt{7}}{2}$ $\quad \sin\theta > 0$

r $\quad +$



$y^2 + 4 = 7$

$\sqrt{y^2} = \pm\sqrt{3}$

y

$\cot\theta = \frac{-2\sqrt{3}}{\sqrt{3}\sqrt{3}} = \frac{-2\sqrt{3}}{3}$

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Inverse Trig Functions

$\cos^{-1}x$, $\sec^{-1}x$, $\cot^{-1}x$	All +
$\csc^{-1}x$, $\sin^{-1}x$, $\tan^{-1}x$	−

$-\frac{\pi}{2}$ $\quad -\frac{\pi}{2}$ $\quad \frac{\pi}{2}$

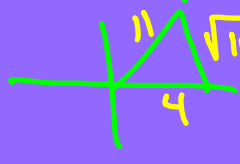
$\sin^{-1}\left(-\frac{1}{2}\right) = -\frac{\pi}{6}$

$\frac{\pi}{6}$

$\text{Arcsec}\left(-\frac{2\sqrt{3}}{3}\right) = \frac{5\pi}{6}$

$\frac{\pi}{6}$

$\csc\left(\sec^{-1}\frac{11}{4}\right)$ $\quad \frac{r}{x}$



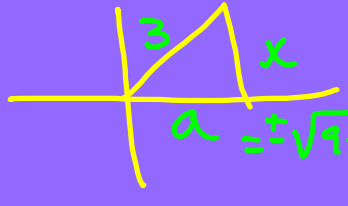
$16 + y^2 = 121$

$y^2 = \sqrt{105}$

$\csc\theta = \frac{r}{y} = \frac{11}{\sqrt{105}}$

$= \frac{11\sqrt{105}}{105}$

$\cos\left(\sin^{-1}\frac{x}{3}\right)$ $\quad \frac{y}{r}$



$a^2 + x^2 = 9$

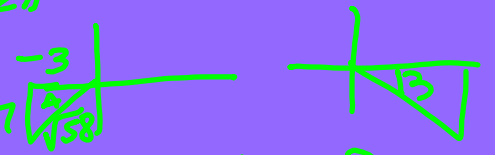
$\sqrt{a^2} = \sqrt{9-x^2}$

$\frac{x}{r} = \frac{\pm\sqrt{9-x^2}}{3}$

$\tan A = \frac{7}{3}$ $\quad \csc B = -3$

$\pi < A < \frac{3\pi}{2}$ $\quad \frac{3\pi}{2} < B < 2\pi$

find $\cos(A-B)$

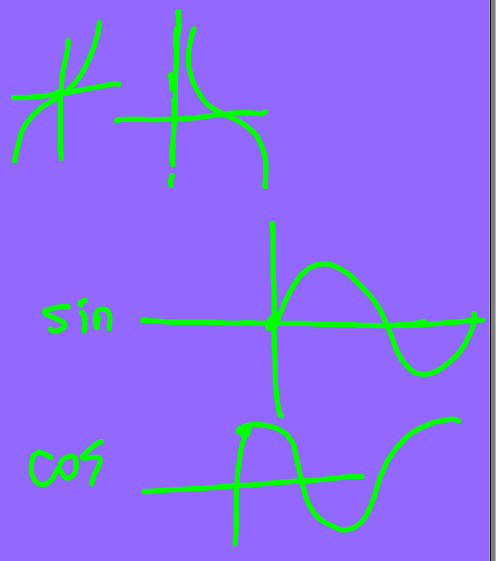


$\cos(A-B) = \cos A \cos B + \sin A \sin B$

$\left(\frac{-3}{\sqrt{58}}\right)(\quad) + (\quad)(\quad)$

$y = a \sin(bx+c) + d$

	sin / cos	sec / csc		tan / cot
amp.	$\lvert a \rvert$	NA		NA
per.	$\frac{2\pi}{b}$	$\frac{2\pi}{b}$		$\frac{\pi}{b}$
V.S.	d	d		d
phase shift	$bx+c=0$, $x=-c/b$	"		"



$$\text{8)} \quad \frac{\sin 2\theta}{\sin\theta} - \frac{\cos 2\theta}{\cos\theta} = \sec\theta$$

$$\frac{2\sin\theta\cos\theta}{\sin\theta} - \frac{2\cos^2\theta - 1}{\cos\theta} = \frac{1}{\cos\theta}$$

$$\cos\theta\left(\frac{2\cos\theta}{\cos\theta} - \frac{2\cos^2\theta - 1}{\cos\theta}\right)$$

$$\frac{2\cos^2\theta}{\cos\theta} + \frac{-2\cos^2\theta + 1}{\cos\theta}$$

$$= \frac{1}{\cos\theta}$$