



Dec 3-8:24 AM

Ditto 6.1 #21 - 33

$$21. \sin \frac{2\pi}{3} = \frac{\sqrt{3}}{2} \quad \cos \frac{2\pi}{3} = -\frac{1}{2} \quad \tan \frac{2\pi}{3} = -\sqrt{3}$$

$$22. \sin \frac{5\pi}{4} = -\frac{\sqrt{2}}{2} \quad \cos \frac{5\pi}{4} = -\frac{\sqrt{2}}{2} \quad \tan \frac{5\pi}{4} = 1$$

$$23. \sin \frac{-7\pi}{3} = -\frac{\sqrt{3}}{2} \quad \cos \frac{-7\pi}{3} = \frac{1}{2} \quad \tan \frac{-7\pi}{3} = -\sqrt{3}$$

$$24. \sin 3\pi = 0 \quad \cos 3\pi = -1 \quad \tan 3\pi = 0$$

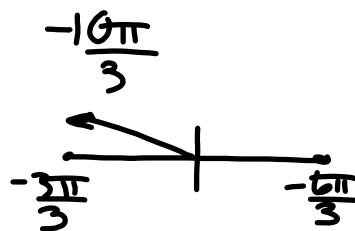
$$25. \sin \frac{11\pi}{6} = -\frac{1}{2} \quad \cos \frac{11\pi}{6} = \frac{\sqrt{3}}{2} \quad \tan \frac{11\pi}{6} = -\frac{\sqrt{3}}{3}$$

$$26. \sin \frac{-10\pi}{3} = \frac{\sqrt{3}}{2} \quad \cos \frac{-10\pi}{3} = \frac{1}{2} \quad \tan \frac{-10\pi}{3} = \sqrt{3}$$

$$27. \sin \frac{-25\pi}{4} = -\frac{\sqrt{2}}{2} \quad \cos \frac{-25\pi}{4} = \frac{\sqrt{2}}{2} \quad \tan \frac{-25\pi}{4} = -1$$

$$28. -\frac{\sqrt{3}}{2} \quad 29. -\frac{\sqrt{3}}{2} \quad 30. -\frac{\sqrt{2}}{2} \quad 31. \frac{1}{2}$$

$$32. \frac{-\sqrt{6} + \sqrt{2}}{4} \quad 33. \frac{\sqrt{6} - \sqrt{2}}{4}$$



$$\left(\frac{\sqrt{3}}{2}\right)(1) + (0)\left(\frac{1}{2}\right)$$

$$\frac{2\pi}{3} \rightarrow Q II$$

$$\pi \rightarrow (-1, 0)$$

$$\left(-\frac{1}{2}\right)(-1) + \left(\frac{\sqrt{3}}{2}\right)(0)$$

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Reciprocal Functions:

$$\csc \theta = \frac{1}{\sin \theta}$$

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

$$\cot \theta = \frac{1}{\tan \theta}$$

change...

also:

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

so...

$$\cot \theta = \frac{\cos \theta}{\sin \theta}$$

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Steps:

Factor if possible
 Replace with sin or cos
 Cancel like terms

1. $\cot x \sec x$

$$: \frac{\cancel{\cos x}}{\sin x} \cdot \frac{1}{\cancel{\cos x}}$$

$$: \frac{1}{\sin x} \text{ or } \csc x$$

3. $\sec x \sin x$

$$\frac{1}{\cos x} \cdot \frac{\sin x}{1} = \frac{\sin x}{\cos x}$$

$$\text{or } \tan x$$

2. $\frac{\cancel{\cos t} \cancel{\sin t}}{\cancel{\sin t} \cancel{\cos t}}$

$$: \frac{\cancel{\cos t}}{\cancel{\sin t}} \quad \frac{\cos x}{\sin x}$$

$$: \cot x$$

$$\frac{x^2 y}{y^2 x}$$

4. $\tan \theta (\csc \theta)$

$$= \frac{\cancel{\sin \theta}}{\cos \theta} \cdot \frac{1}{\cancel{\sin \theta}}$$

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

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5. Fill in the missing entries in the following table. Give exact answers, not decimal approximations.

$(1,0)$ $(0,1)$ π $(-1,0)$ $(0,-1)$

t	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π	$\frac{3\pi}{2}$
sin t	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	-1
cos t	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	-1	0
tan t	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	und	$-\sqrt{3}$	-1	$-\frac{1}{\sqrt{3}}$	0	und
cot t	und	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0	$-\frac{1}{\sqrt{3}}$	-1	$-\sqrt{3}$	und	0
sec t	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	und	-2	$-\sqrt{2}$	$-\frac{2\sqrt{3}}{3}$	-1	und
csc t	und	2	$\sqrt{2}$	$\frac{2\sqrt{3}}{3}$	1	$\frac{2\sqrt{3}}{3}$	$\sqrt{2}$	2	und	-1

$\frac{3}{\sqrt{3}}$ $\frac{1}{\sqrt{3}}$
 $\frac{2}{\sqrt{3}}$ $\frac{2}{\sqrt{2}}$

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6. Find the value of the remaining trig functions if $\cos t = -\frac{4}{5}$ and $\sin > 0$

$\sin t = \frac{3}{5}$ $\csc t = \frac{5}{3}$ $\cos \frac{A}{H}$
 $\cos t = -\frac{4}{5}$ $\sec t = -\frac{5}{4}$
 $\tan t = -\frac{3}{4}$ $\cot t = -\frac{4}{3}$

① Find quadrant
 ② Draw $\triangle$
 ③ Find the missing side(s)
 ④ Find the remaining values
 3-4-5 7-24-25
 5-12-13 9-40-41
 8-15-17

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7. Find the value of the remaining trig functions if $\sin t = -\frac{1}{4}$ and $\tan < 0$

$$\sin t = -\frac{1}{4}$$

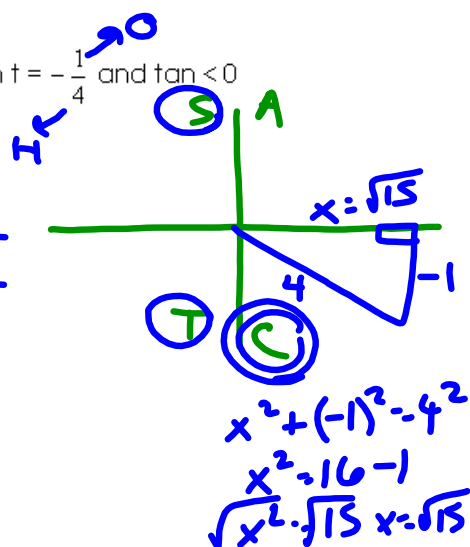
$$\csc t = -4$$

$$\cos t = \frac{\sqrt{15}}{4}$$

$$\sec t = \frac{4}{\sqrt{15}} = \frac{4\sqrt{15}}{15}$$

$$\tan t = \frac{-1}{\sqrt{15}} = -\frac{\sqrt{15}}{15}$$

$$\cot t = -\sqrt{15}$$



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8. Find the value for all six trig functions for $\theta = -\frac{2\pi}{3}$

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

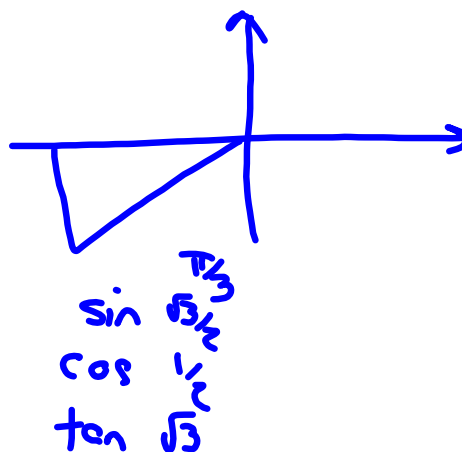
$$\csc \theta = -\frac{2\sqrt{3}}{3}$$

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

$$\sec \theta = -2$$

$$\tan \theta = +\sqrt{3}$$

$$\cot \theta = +\frac{\sqrt{3}}{3}$$



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9. Evaluate all six trigonometric functions at t , $(3, -4)$, a point on the terminal side of an angle of t radians in standard position.

$$\sin t = -\frac{4}{5}$$

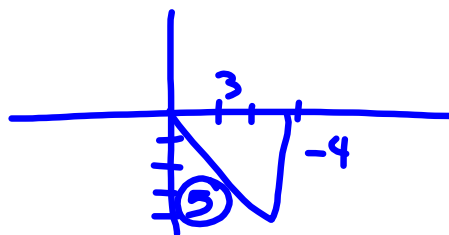
$$\csc t = -\frac{5}{4}$$

$$\cos t = \frac{3}{5}$$

$$\sec t = \frac{5}{3}$$

$$\tan t = -\frac{4}{3}$$

$$\cot t = -\frac{3}{4}$$



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