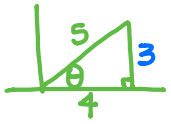
→ one Δ
ANGLE → two Δs

4.4 Composition of Trig Values Name:_____

use restricted ranges!

Find the exact values of each expression using radicals or radians if necessary.

1. $\tan\left(\cos^{-1}\left(\frac{4}{5}\right)\right)$ $\frac{A}{H}$



$\tan\theta = \frac{OPP}{ADJ}$

$\boxed{\frac{3}{4}}$

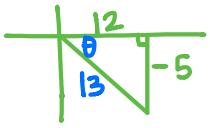
$4^2 + y^2 = 5^2$
$16 + y^2 = 25$
$y^2 = 9$
$y = 3$

2. $\cos\left(\arctan\left(\frac{4}{3}\right)\right)$

$\cos\left(\tan^{-1}\left(\frac{4}{3}\right)\right)$

$\boxed{\frac{3}{5}}$

3. $\sin\left(\tan^{-1}\left(-\frac{5}{12}\right)\right)$ $\frac{O}{A}$



$\sin\theta = \frac{OPP}{HYP}$

$\boxed{\frac{-5}{13}}$

$12^2 + (-5)^2 = c^2$
$144 + 25 = c^2$
$169 = c^2$
$13 = c$

4. $\sec\left(\arcsin\left(-\frac{4}{7}\right)\right)$

$\boxed{\frac{7}{\sqrt{33}}}$

ANGLE 5. $\sin^{-1}(\cos(0))$ #

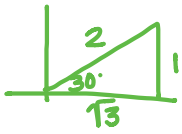
$\cos 0 = 1$

$\sin^{-1}(1)$

where does $y = 1$?

$\boxed{\frac{\pi}{2}}$

ANGLE 6. $\arccos\left(\sin\left(\frac{\pi}{6}\right)\right)$ $\frac{\pi}{6} = 30°$

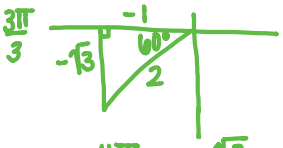


$\sin\frac{\pi}{6} = \frac{1}{2}$

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

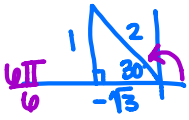
$\boxed{\frac{\pi}{3}}$

ANGLE 7. $\cos^{-1}\left(\sin\left(\frac{4\pi}{3}\right)\right)$



$\sin\frac{4\pi}{3} = \frac{-\sqrt{3}}{2}$

$\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$ QII



$\boxed{\frac{5\pi}{6}}$

8. $\cot\left(\csc^{-1}\left(-\frac{5}{3}\right)\right)$

$\frac{-4}{3}$

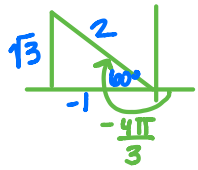
ANGLE 9. $\sin^{-1}\left(\cos\left(\frac{7\pi}{6}\right)\right)$

$\frac{-\pi}{3}$

ANGLE 10. $\tan^{-1}(\cos(\pi))$

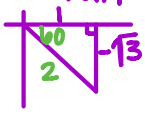
$-\frac{\pi}{4}$

ANGLE 11. $\tan^{-1}\left(\tan\left(-\frac{4\pi}{3}\right)\right)$



$\tan\left(-\frac{4\pi}{3}\right) = \frac{-\sqrt{3}}{1}$

$\tan^{-1}(-\sqrt{3})$ QIV



$\boxed{-\frac{\pi}{3}}$

12. $\cos\left(\arcsin\left(-\frac{\sqrt{3}}{5}\right)\right)$

$\frac{\sqrt{22}}{5}$

13. $\sin\left(\sec^{-1}\left(-\frac{4}{3}\right)\right)$

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

ANGLE 14. $\operatorname{arcsec}\left(\sec\left(-\frac{\pi}{3}\right)\right)$

$\frac{\pi}{3}$

ANGLE 15. $\sin^{-1}\left(\cot\left(\frac{3\pi}{4}\right)\right)$

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

16. $\tan\left(\operatorname{arcsec}\left(-\sqrt{2}\right)\right)$

-1

17. $\sin\left(\sec^{-1}(-4)\right)$

$\frac{\sqrt{15}}{4}$

18. $\sec\left(\csc^{-1}(-3)\right)$

$\frac{3}{\sqrt{8}}$

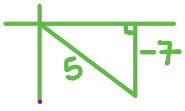
19. $\csc\left(\cot^{-1}(2)\right)$

$\sqrt{5}$

ANGLE 20. $\arcsin\left(\cos(\pi)\right)$

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

21. $\tan\left(\sin^{-1}\left(-\frac{7}{5}\right)\right)$



hypotenuse should be longest side.

NO SOLUTION