

Name: \_\_\_\_\_

**K E Y**

### Unit 3 Test Review

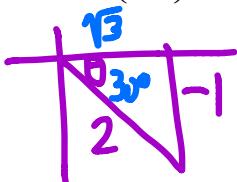
3.1 – Inverse Parent Functions....3.2 – Principal Inverse Values

3.4 – General Solutions...3.5 - Compositions

Find the exact principal value in radians (**1 answer... remember restricted ranges**)

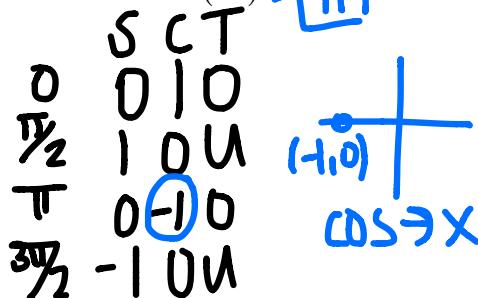
1.  $\sin^{-1}\left(-\frac{1}{2}\right)$

**Q IV**

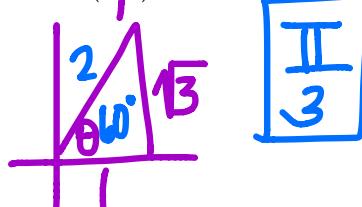


$\boxed{-\frac{\pi}{6}}$

2.  $\cos^{-1}(-1) = \boxed{\pi}$

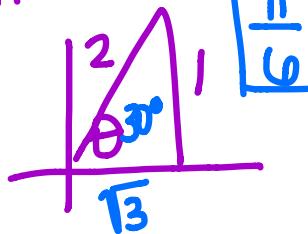


3.  $\tan^{-1}\left(\sqrt{3}\right)$  **Q I**

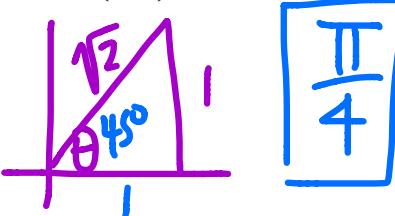


4.  $\csc^{-1}(2)$  **Q I**

$\frac{1}{\sin}$



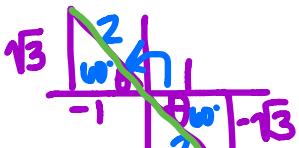
5.  $\arccos\left(\frac{\sqrt{2}}{2}\right) = \cos^{-1}\left(\frac{1}{\sqrt{2}}\right)$  **Q I**



Find the general solution to the equation and list the first 3 positive solutions.

6.  $\tan x = -\sqrt{3}$

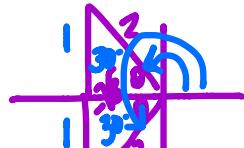
$x = \tan^{-1}(-\sqrt{3})$  **Q II Q IV**



1st 3 positive  $\frac{2\pi}{3}, \frac{5\pi}{3}, \frac{8\pi}{3}$

8.  $\cos x = \frac{-\sqrt{3}}{2}$

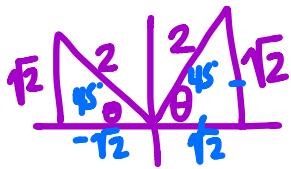
$x = \cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$  **Q II Q III**



$\frac{5\pi}{6}, \frac{7\pi}{6}, \frac{13\pi}{6}$

7.  $\sin x = \frac{\sqrt{2}}{2}$

$x = \sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$  **Q I Q II**



1st 3 +  $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{9\pi}{4}$

9.  $\csc x = 1$

$x = \csc^{-1}(1)$

$\bullet(0, 1)$

$\frac{1}{\sin}$  sin is y-coord.

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

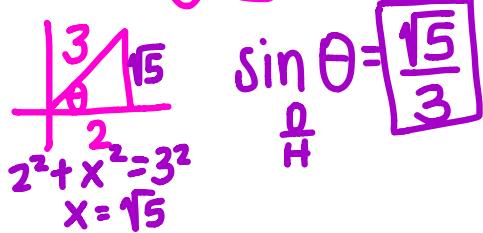
$\frac{\pi}{2}, \frac{5\pi}{2}, \frac{9\pi}{2}$

**S A**  
**T C**

# SOHCAHTOA

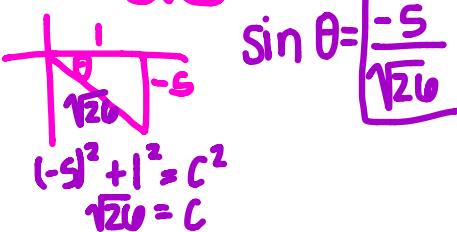
Find the exact value using radicals or radians when necessary

10.  $\sin(\cos^{-1}\left(\frac{2}{3}\right))$



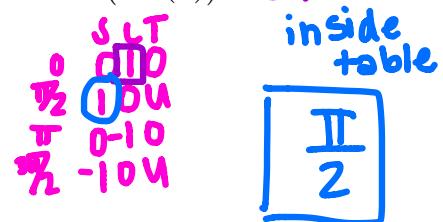
$$\sin \theta = \frac{\sqrt{5}}{3}$$

11.  $\sin(\tan^{-1}(-5))$



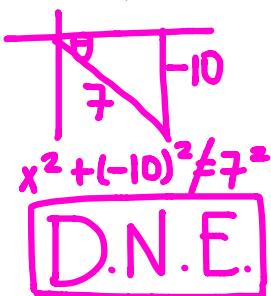
$$\sin \theta = \frac{-5}{\sqrt{26}}$$

12.  $\sin^{-1}(\cos(0)) = \sin^{-1}(1)$



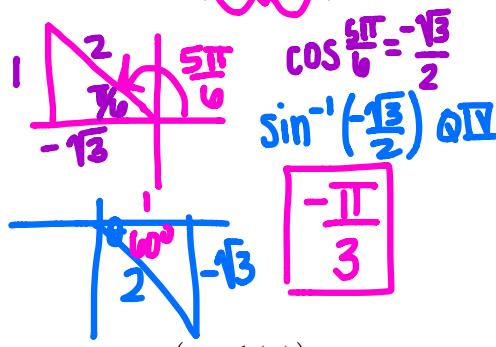
$$\boxed{\frac{\pi}{2}}$$

13.  $\cos(\arcsin\left(-\frac{10}{7}\right))$



$$\boxed{\text{D.N.E.}}$$

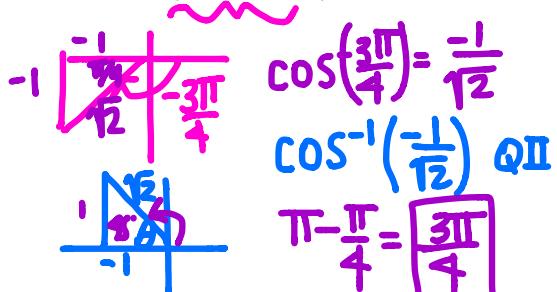
14.  $\sin^{-1}\left(\cos\left(\frac{5\pi}{6}\right)\right)$



$$\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right) \text{ QIV}$$

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

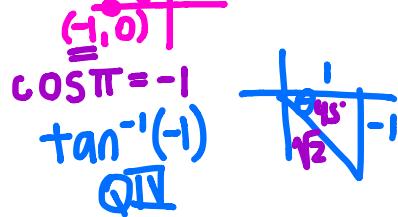
15.  $\cos^{-1}\left(\cos\left(-\frac{3\pi}{4}\right)\right)$



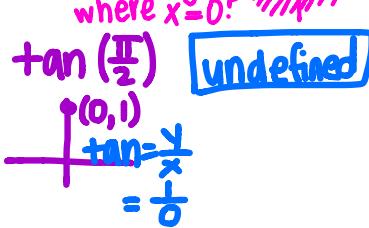
$$\cos^{-1}\left(-\frac{1}{2}\right) \text{ QII}$$

$$\pi - \frac{\pi}{4} = \boxed{\frac{3\pi}{4}}$$

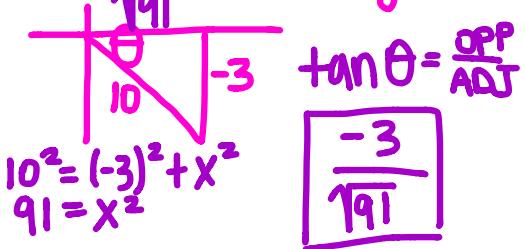
16.  $\tan^{-1}(\cos(\pi)) = \boxed{-\frac{\pi}{4}}$



17.  $\tan(\cos^{-1}(0))$   
what angle where  $x=0$ ?  $\frac{\pi}{2}$   $(0, 1)$



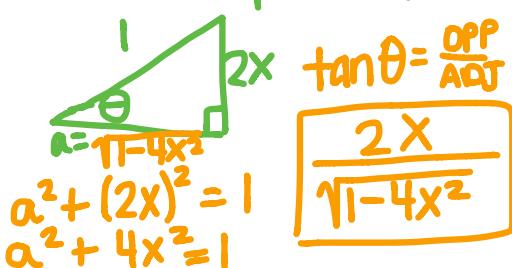
18.  $\tan\left(\arccsc\left(-\frac{10}{3}\right)\right)$   $\csc x = \frac{1}{\sin x}$



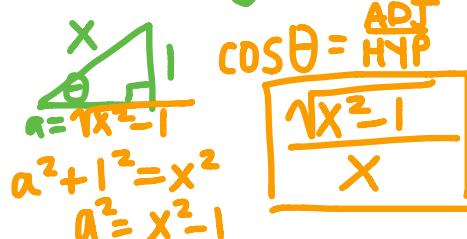
$$\boxed{\frac{-3}{\sqrt{91}}}$$

Write as an algebraic expression

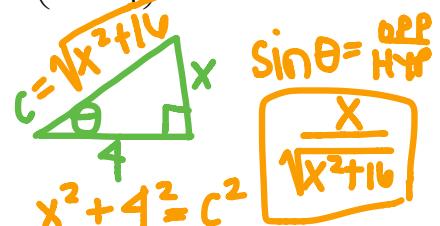
19.  $\tan(\arcsin(2x))$   $\sin = \frac{O}{H}$



20.  $\cos(\csc^{-1} x)$   $\csc = \frac{1}{\sin}$

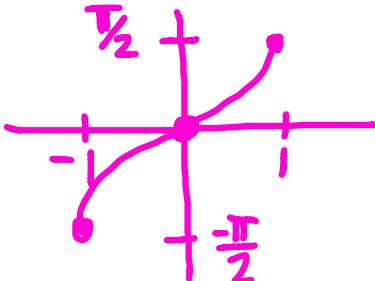


21.  $\sin\left(\tan^{-1} \frac{x}{4}\right)$   $\tan = \frac{O}{A}$

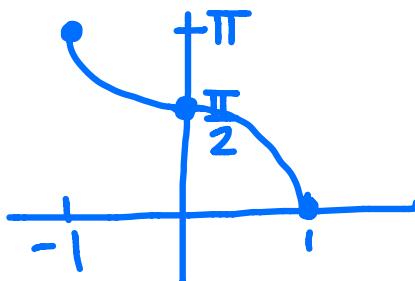


List the restricted ranges and draw the parent functions

22.  $y = \sin^{-1} x$   $\boxed{[-\frac{\pi}{2}, \frac{\pi}{2}]}$



23.  $y = \cos^{-1} x$   $\boxed{[0, \pi]}$



24.  $y = \tan^{-1} x$   $\boxed{(-\frac{\pi}{2}, \frac{\pi}{2})}$

