Name:_____

3.7 Compositions of Functions

Rewrite as an algebraic expression

1. $\cos(\sin^{-1} x)$

$\sqrt{1-x^2}$

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

$\frac{x}{\sqrt{x^2+1}}$

3. $\sin\left(\arctan\frac{1}{x}\right)$

$\frac{1}{\sqrt{1+x^2}}$

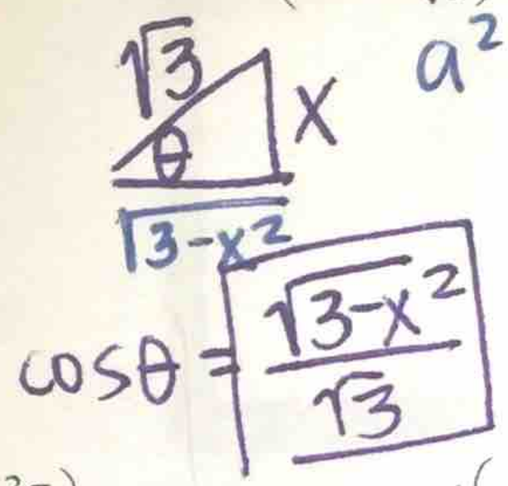
4. $\csc\left(\tan^{-1} 3x\right)$

$\frac{\sqrt{1+9x^2}}{3x}$

5. $\tan\left(\sec^{-1} 2x\right)$

$\sqrt{4x^2-1}$

6. $\cos\left(\arcsin\frac{x}{\sqrt{3}}\right)$



$a^2+x^2=(\sqrt{3})^2$

$a^2=3-x^2$

$a=\sqrt{3-x^2}$

$\cos\theta=\frac{\sqrt{3-x^2}}{\sqrt{3}}$

Find the exact value of the expression, if it's defined

7. $\sec\left(\sin^{-1}\frac{4}{5}\right)$

$\frac{5}{3}$

8. $\cos^{-1}(\sin\pi)$

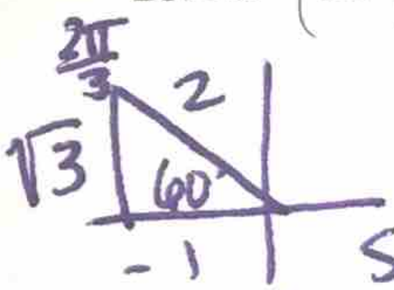
$\frac{\pi}{2}$

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

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

10. $\cos^{-1}\left(\sin\frac{8\pi}{3}\right)$

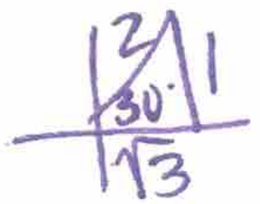
$\frac{8\pi}{3}-\frac{6\pi}{3}=\frac{2\pi}{3}$



$\sin\frac{8\pi}{3}=\frac{\sqrt{3}}{2}$

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

$\frac{\pi}{6}$



11. $\tan\left(\cos^{-1}\frac{25}{7}\right)$

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12. $\tan\left(\sec^{-1}\frac{13}{5}\right)$

$\frac{12}{5}$

13. $\arcsin\left(\cos\frac{7\pi}{6}\right)$

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

14. $\sin^{-1}\left(\cos\frac{-5\pi}{4}\right)$

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