DATE: _____

Inverse Trigonometric Functions (Target 5F)

Evaluate each of the following inverse trigonometric functions w/o using a calculator. Write your answers in radians.

1. $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = \pi/3$

2. $\tan^{-1}(0) = 0$ ($\sin\theta = 0$, $\cos\theta$)

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

4. $\cos^{-1}\left(\frac{1}{2}\right) = \pi/3$

5. $\arctan(1) = \pi/4$ ($\sin\theta = 1$, $\cos\theta$)

6. $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right) = 3\pi/4$

7. $\cos^{-1}\left(\frac{\sqrt{2}}{2}\right) = \pi/4$

8. $\arccos(0) = \pi/2$

9. $\tan^{-1}(-\sqrt{3}) = -\pi/3$ ($\sin\theta = -\sqrt{3}$, $\cos\theta$)

10. $\tan^{-1}\left(-\frac{\sqrt{3}}{3}\right) = -\frac{\pi}{6}$ ($\frac{\sin\theta}{\cos\theta} = \frac{-\sqrt{3}}{3}$)

11. $\arcsin\left(-\frac{\sqrt{2}}{2}\right) = -\pi/4$

12. $\arccos\left(-\frac{1}{2}\right) = \frac{2\pi}{3}$

Use a calculator to evaluate each expression in radians and degrees.

13. $\cos^{-1}(-0.33)$

109.269°

1.907 radians

14. $\sin^{-1}(0.81)$

54.096°

0.944 radians

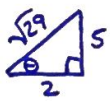
15. $\tan^{-1}\left(\frac{11}{16}\right)$

34.509°

0.602 radians

Evaluate without using a calculator.

16. $\sin\left(\tan^{-1}\left(\frac{5}{2}\right)\right)$, θ



$= \sin\theta$

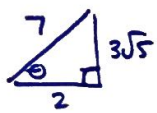
$= \frac{5}{\sqrt{29}}$

17. $\cos\left(\sin^{-1}\left(\frac{3}{4}\right)\right)$, θ

$= \cos\theta$

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

18. $\tan\left(\cos^{-1}\left(\frac{2}{7}\right)\right)$, θ



$= \tan\theta$

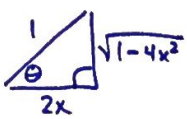
$= \frac{3\sqrt{5}}{2}$

19. $\sin(\tan^{-1} x)$, θ

$= \sin\theta$

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

20. $\sin(\arccos 2x)$, θ



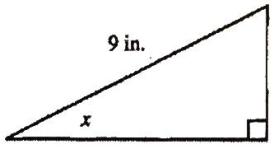
$= \sin\theta$

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

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

Find the measure of the angle x in each triangle.

21.

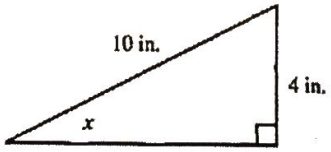


$\cos^{-1}\cos x = \cos^{-1}\frac{5}{9}$

$x = \cos^{-1}\left(\frac{5}{9}\right)$

$x = 56.251°$

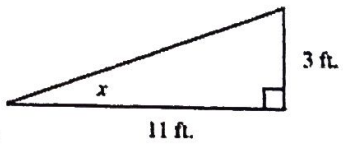
22.



$x = \sin^{-1}\left(\frac{4}{10}\right)$

$x = 23.578°$

23.



$x = \tan^{-1}\left(\frac{3}{11}\right)$

$x = 15.255°$