Unit 5C: INVERSE Trig Functions Worksheet

Name:_____ **Date:** _____ **Period:** _____

1) Give the restricted domain of the original function that we use to make the inverse into a function.

a) y = tan x b) y = sin x c) y = cos x

2) Graph each with labels.

a) $y = \sin^{-1} x$ b) $y = \tan^{-1} x$ c) y = arccos x

3) Give the domain and range for each in interval notation.

a) $y = \cos^{-1} x$ b) y = arcsin x c) y = arctan x

Give the values for each of the following.

4) $\arcsin\left(\frac{1}{2}\right)$ _____

5) $Cos^{-1}\left(\frac{1}{2}\right)$ _____

6) $\arcsin\left(-\frac{1}{2}\right)$ _____

7) $Cos^{-1}(0)$ _____

8) $\arctan(1)$ _____

9) $Sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$ _____

10) Arcsin (−1) _____

11) $\arccos\left(-\frac{1}{2}\right)$ _____

12) $Sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$ _____

13) $Arc\cos\left(-\frac{\sqrt{2}}{2}\right)$ _____

14) $Tan^{-1}\left(-\sqrt{3}\right)$ _____

15) $Cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$ _____

16) $Arc\cos(4)$ _____

17) $Tan^{-1}\left(\frac{\sqrt{3}}{3}\right)$ _____

18) $Sin^{-1}(0)$ _____

Give the values for each of the following.

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

20) $\arccos\left(\sin\frac{3\pi}{2}\right)$ _____

21) $\tan^{-1}\left(\tan\frac{3\pi}{4}\right)$ _____

22) $\arccos\left(\cos\frac{5\pi}{6}\right)$ _____

23) $\arcsin\left(\sin\frac{5\pi}{6}\right)$ _____

24) $\cos\left(Arc\tan\left(-\sqrt{3}\right)\right)$ _____

25) $\tan\left(\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)\right)$ _____

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

27) $\sin\left(\sin^{-1}(5)\right)$ _____

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

29) $\cos^{-1}\left(\cos\frac{2\pi}{3}\right)$ _____

30) $\sin^{-1}\left(\sin\frac{2\pi}{3}\right)$ _____

31) $\cos^{-1}\left(\cos\frac{11\pi}{6}\right)$ _____

32) $\sin^{-1}\left(\sin\frac{11\pi}{6}\right)$ _____

Give the values for each of the following.

33) $\cos\left(\sin^{-1}\frac{3}{5}\right)$ _____

34) $\sin\left(\sin^{-1}\frac{3}{5}\right)$ _____

35) $\tan\left(\sin^{-1}\frac{5}{6}\right)$ _____

36) $\sin\left(\sin^{-1}\frac{6}{5}\right)$ _____

37) $\tan\left(\tan^{-1}\frac{6}{5}\right)$ _____

38) $\cos\left(\sin^{-1}\left(-\frac{2}{7}\right)\right)$ _____

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

40) $\cos(\arctan 3m)$ _____

41) $\sin\left(\cos^{-1}\left(\frac{2a}{5}\right)\right)$ _____

42) $\tan(\arcsin 5x)$ _____

Answer each of the following.

43) Explain the difference between the two equations: $\sin^{-1}\left(\frac{1}{2}\right) = x$ and $\sin x = \frac{1}{2}$

44) Do you understand the progression of this material from inverses algebraically to working with the inverses of the trig functions?

45) Give the domain and range for each of the following:

a) y = arccot x b) y = $\sec^{-1}$ x c) y = $\csc^{-1}$ x

Give the values for each of the following.

46) $arc\sec 2$ _____

47) $arc\cot(0)$ _____

48) $arc\csc(-2)$ _____

49) $arc\sec\left(\frac{2\sqrt{3}}{3}\right)$ _____

50) $arc\sec\left(-\frac{2\sqrt{3}}{3}\right)$ _____

51) $arc\sec(-2)$ _____

52) $arc\csc(-1)$ _____

53) $arc\csc\left(\frac{2\sqrt{3}}{3}\right)$ _____

54) $arc\csc\left(-\frac{2\sqrt{3}}{3}\right)$ _____

55) $arc\sec\left(-\sqrt{2}\right)$ _____