APPC Lesson 7.2 Homework

Name ______________________

1. Explain why the domain of $y = \sin^{-1} x$ is $[-1, 1]$.

2. Evaluate.

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

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

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

3. Which of the following pairs of functions have the same range? Choose all that apply.

I. $f(x) = \sin x$ and $g(x) = \cos x$

II. $f(x) = \tan x$ and $g(x) = \arctan x$

III. $f(x) = \arcsin x$ and $g(x) = \arctan x$

IV. $f(x) = \cos^{-1} x$ and $g(x) = \sin^{-1} x$

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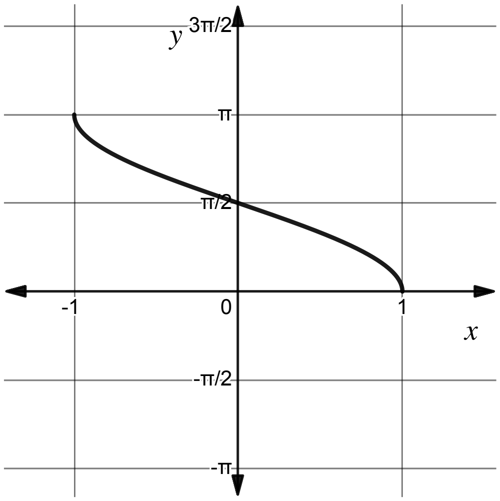
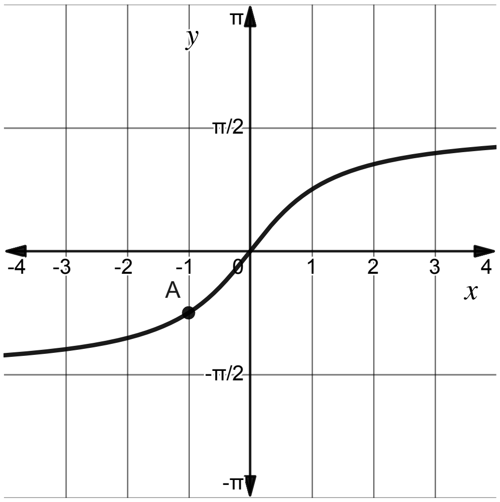
4. Let $f(x) = \arcsin x,\ g(x) = \arccos x$, and $h(x) = \arctan x$. Which of these functions is graphed below? Explain how you know.



5. Evaluate $\sin(\sin^{-1}(0.25))$ and explain your reasoning.

6. The graph of $y - \tan^{-1} x$ is shown. Find the coordinates of point A.



7. In order for $y = \sin^{-1} x$ to be a function, the domain of $y = \sin x$ is restricted to $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$.

a. Explain why the domain was restricted to this interval.

b. Identify two other intervals that could have been chosen as the domain.

8. Kymani was asked to evaluate $\cos^{-1}\left[\cos\left(-\frac{\pi}{4}\right)\right]$. His answer and explanation are given below.

$\cos^{-1}\left[\cos\left(-\frac{\pi}{4}\right)\right] = -\frac{\pi}{4}$ because the inverse cosine function undoes the cosine function, so the output must be the same as the original input.

Do you agree with his answer and explanation? Explain.

9. Consider the following:

a. How many solutions are there for the equation $\sin\theta = -\frac{1}{2}$?

b. How many solutions are there for the equation $\sin^{-1}\left(-\frac{1}{2}\right) = \theta$?

c. Explain the relationship between parts a and b.