

### 3.9 Inverse Trigonometric Functions

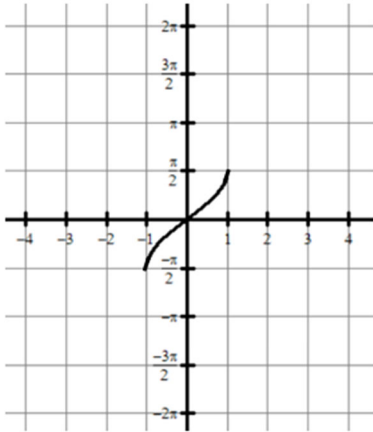
AP Precalculus

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

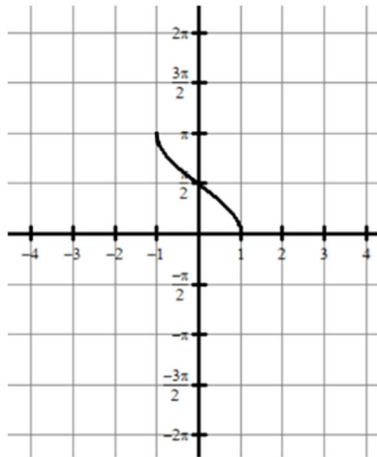
**CA #2**

**The parent function is shown below. Use the parent function to graph  $g(x)$ .**

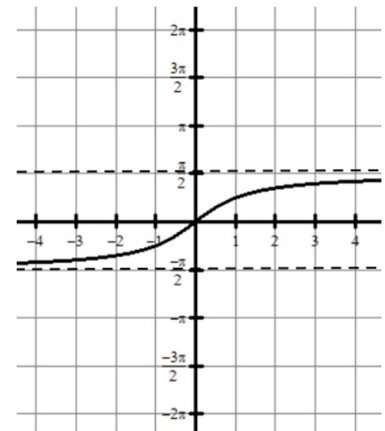
1.  $g(x) = 2\sin^{-1}\left(\frac{1}{2}x\right) - \frac{\pi}{2}$



2.  $g(x) = 2\cos^{-1}(-(x + 1))$



3.  $g(x) = 2\tan^{-1}(x - 1) - \pi$



**Find the inverse of each function and list the domain and range of  $f^{-1}(x)$ .**

4.  $f(x) = 2\sin(x - \pi) + 1$  for  $-\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$

5.  $f(\theta) = \frac{1}{2}\cos(2\theta) - 3$  for  $0 \leq \theta \leq \frac{\pi}{2}$

Evaluate the following expressions. Find the principal value in radians. NO CALCULATOR!!

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

7.  $\cos^{-1}(-1)$

8.  $\arctan(-\sqrt{3})$

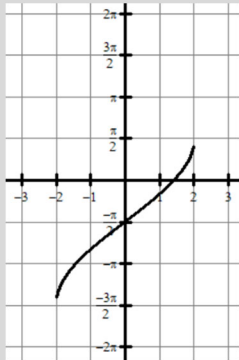
9.  $\arccos\left(-\frac{\sqrt{2}}{2}\right)$

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

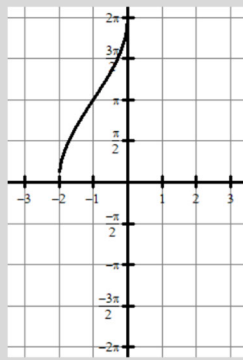
11.  $\arccos\left(\frac{\sqrt{3}}{2}\right)$

Answers to 3.9 CA #2

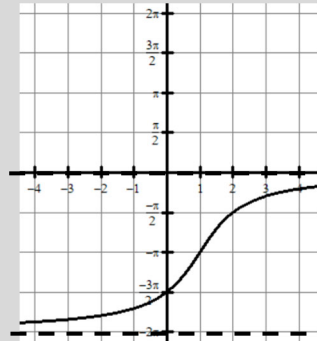
1.



2.



3.



4.

$$f^{-1}(x) = \sin^{-1}\left(\frac{x-1}{2}\right) + \pi$$

Domain:  $-1 \leq x \leq 3$

Range:  $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$

5.

$$f^{-1}(\theta) = \frac{1}{2} \cos^{-1}(2\theta + 6)$$

Domain:  $-3.5 \leq x \leq -2.5$

Range:  $0 \leq y \leq \frac{\pi}{2}$

6.  $\frac{\pi}{3}$

7.  $\pi$

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

9.  $\frac{3\pi}{4}$

10.  $\frac{\pi}{6}$

11.  $\frac{\pi}{6}$