

Student: _____
Date: _____

Instructor: Joe Beters
Course: Pre-Calculus Pre AP (Master Course)

Assignment: 7.1 Classwork Day 1

1. Find the exact value of the following expression. Do not use a calculator.

$$\cos^{-1}\left[\cos\left(\frac{7\pi}{8}\right)\right]$$

Select the correct choice and fill in any answer boxes in your choice below.

A. $\cos^{-1}\left[\cos\left(\frac{7\pi}{8}\right)\right] = \underline{\hspace{2cm}}$

(Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression.)

- B. There is no solution.

2. Find the exact value, if any, of the composite function. Do not use a calculator.

$$\cos(\cos^{-1}1.2)$$

Select the correct choice below and fill in any answer boxes in your choice.

A. $\cos(\cos^{-1}1.2) = \underline{\hspace{2cm}}$

(Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression.)

- B. There is no solution.

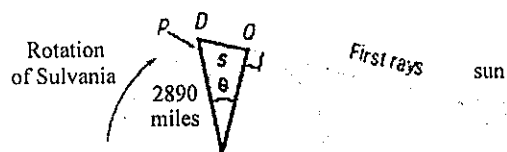
3. Find the exact solution of the equation.

$$12 \tan^{-1}x = 2\pi$$

The solution set is $\{\underline{\hspace{2cm}}\}$.

(Simplify your answer, including any radicals. Type an exact answer, using radicals as needed.)

4. On the planet Sylvania, a mountain with an elevation of 1610 feet is the highest peak on the east coast of a land mass. The summit of the mountain is the first place on the land mass to be lit by the rays of the sun. How much sooner do the first rays of the sun touch the summit than the base of the mountain below, at sea level? Assume that one rotation of Sylvania takes 24 hours and that the radius of Sylvania is 2890 miles.



The first rays of the sun touch the summit about _____ minutes sooner than the base of the mountain below, at sea level.
(Round to two decimal places as needed.)

1. A. $\cos^{-1}\left[\cos\left(\frac{7\pi}{8}\right)\right] = \underline{\frac{7\pi}{8}}$

(Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression.)

2. B. There is no solution.

3. $\frac{\sqrt{3}}{3}$

4. 3.33

7.1 classwork day 1

$$\textcircled{1} \cos^{-1} \left[\cos \frac{7\pi}{8} \right]$$

* $0 \leq x \leq \pi$ for $\cos^{-1}(\cos x)$ *

$$= \boxed{\frac{7\pi}{8}}$$

$$\textcircled{2} \cos(\cos^{-1} 1.2)$$

* $-1 \leq x \leq 1$ for $\cos(\cos^{-1} x)$

\boxed{B} no solution 1.2 outside parameters

$$\textcircled{3} 12 \tan^{-1} x = 2\pi$$

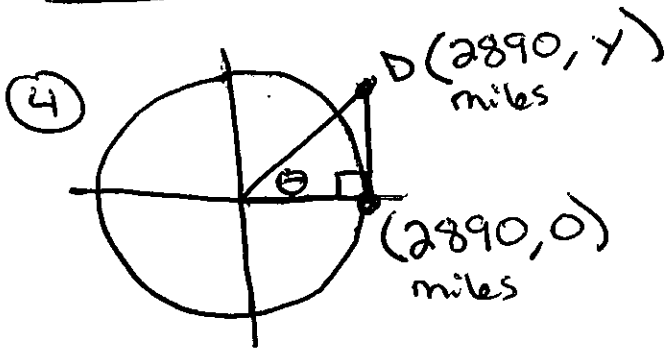
$$\tan^{-1} x = \frac{\pi}{6}$$

$$\tan \frac{\pi}{6} = x$$

$$\frac{\sin \frac{\pi}{6}}{\cos \frac{\pi}{6}} = x$$

$$\frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$$

7.1 classwork continued

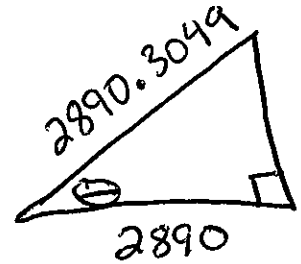


$$1610 \text{ ft} \cdot \frac{1 \text{ mile}}{5280 \text{ ft}} = .3049 \text{ miles}$$

$$y = 2890 + .3049 = 2890.3049$$

$$\cos \theta = \frac{2890}{2890.3049}$$

$$\theta = .0145 \text{ radians}$$



$$s = r\theta$$

$$s = 2890(.0145)$$

$$s = 41.905 \text{ miles}$$

$$\frac{C}{24 \text{ hours}} = \frac{s}{t}$$

$$\frac{2\pi(2890)}{24} = \frac{41.905}{t}$$

$$t = .055386 \text{ hours}$$

$$t = 3.32 \text{ minutes}$$