Student: Cole Lamers **Date:** 07/11/19	**Instructor:** Kelly Galarneau **Course:** CA&T Internet (70263) Galarneau	**Assignment:** 5.6 Inverse Trigonometric Functions

1. Complete the following statement.

   The domain of $f(x) = \sin^{-1} x$ is _____.

   The domain of $f(x) = \sin^{-1} x$ is $[-1,1]$.
   (Type your answer in interval notation.)

2. Complete the following statement.

   The range of $f(x) = \tan^{-1} x$ is _____.

   The range of $f(x) = \tan^{-1} x$ is $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$.
   (Type your answer in interval notation. Type an exact answer using π as needed. Use integers or fractions for any numbers in the expression.)

3. Find the exact value of the expression.

   $\cos^{-1} - 1$

   $\cos^{-1} - 1 =$ π
   (Type your answer in radians. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression.)

4. State whether the following statement is true or false.

   If $-1 \le x \le 0$, then $\sin^{-1} x \le 0$.

   Choose the correct answer below.

   - (●) True
   - ( ) False

5. Select the correct choice that completes the sentence below.

   The domain of $y = \cos^{-1} x$ is $[-1,1]$.

6. Find the exact value of y, or state that y is undefined.

   $y = \sin^{-1}\left(\frac{1}{2}\right)$

   Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

   - (●) **A.** $\sin^{-1}\left(\frac{1}{2}\right) = \frac{\pi}{6}$
     (Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression.)
   - ( ) **B.** The answer is undefined.

7. Find the exact value of y, or state that y is undefined.

   $y = \sin^{-1}(-1)$

   Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

   - (●) **A.** $\sin^{-1}(-1) = -\frac{\pi}{2}$
     (Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression.)
   - ( ) **B.** The answer is undefined.

8. Find the exact value of y or state that y is undefined.

$y = \cos^{-1} 1$

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

A. $y =$ 0
(Simplify your answer. Type an exact answer, using π as needed. Type your answer in radians. Use integers or fractions for any numbers in the expression.)

B. The answer is undefined.

9. Find the exact value of y or state that y is undefined.

$y = \cos^{-1} \frac{\pi}{2}$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $\cos^{-1} \frac{\pi}{2} =$
(Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression. Type your answer in radians.)

B. The answer is undefined.

10. Find the exact value of y or state that y is undefined.

$y = \tan^{-1} 0$

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

A. $y =$ 0
(Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression. Type your answer in radians.)

B. The answer is undefined.

11. Find the exact value of y or state that y is undefined.

$y = \tan^{-1}(-1)$

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

A. $y =$ $-\frac{\text{pi}}{4}$
(Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression. Type your answer in radians.)

B. The answer is undefined.

12. Find the exact value, in radians, of y or state that y is undefined.

$y = \cot^{-1}\left(-\frac{\sqrt{3}}{3}\right)$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $y =$ $\frac{2\pi}{3}$
(Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression.)

B. The answer is undefined.

13. Find the exact value of y, or state that y is undefined.

$y = \cos^{-1}(-9)$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $\cos^{-1}(-9) =$ _____
  (Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression.
- **B.** The answer is undefined.

14. Find the exact value, in radians, of y or state that y is undefined.

$y = \csc^{-1}(-2)$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $\csc^{-1}(-2) = -\frac{\pi}{6}$
  (Simplify your answer. Type an exact answer, using pi as needed. Use integers or fractions for any numbers in the expression.)
- **B.** The answer is undefined.

YOU ANSWERED: A.: $\frac{2\pi}{3}$

15. Find the exact value of y or state that y is undefined.

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

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

- **A.** $y = \frac{1}{4}$
  (Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression. Type your answer in radians.)
- **B.** The answer is undefined.

16. Find the exact value, in radians, of y or state that y is undefined.

$y = \tan^{-1}\left[\tan\left(\frac{\pi}{3}\right)\right]$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $y = \frac{\pi}{3}$
  (Simplify your answer. Type an exact answer, using pi as needed. Use integers or fractions for any numbers in the expression.)
- **B.** The answer is undefined.

17. Find the exact value of y or state that y is undefined.

$y = \tan\left(\tan^{-1}8\right)$

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

- **A.** $y =$ 8
  (Simplify your answer. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression. Type your answer in radians.)
- **B.** The answer is undefined.

18. Find the exact value of y or state that y is undefined.

$$y = \sin^{-1}\left(\sin\frac{5\pi}{3}\right)$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $y =$ $-\frac{\pi}{3}$

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

B. The answer is undefined.

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19. Find the exact value of y or state that y is undefined.

$$y = \tan^{-1}\left(\tan\frac{2\pi}{3}\right)$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $y =$ $-\frac{\pi}{3}$

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

B. The answer is undefined.

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20. Find the exact value, in radians, of y or state that y is undefined.

$$y = \cot^{-1}\left(\frac{\sqrt{3}}{3}\right)$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $y =$ $\frac{\pi}{3}$

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

B. The answer is undefined.

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21. Find the exact value of y, or state that y is undefined.

$$y = \sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right) =$ $-\frac{\pi}{4}$

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

B. The answer is undefined.

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22. Find the exact value of the following expression.

$$\cos^{-1}\frac{1}{2}$$

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

A. $\cos^{-1}\frac{1}{2} =$ $\frac{\pi}{3}$

(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.

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23. Use a calculator to find the value of y in degrees rounded to two decimal places.

$y = \cos^{-1} 0.1$

$y =$ 84.26 °

(Type your answer in degrees. Round to two decimal places as needed.)

24. Use a calculator to find the value of y in radians rounded to two decimal places.

$y = \sin^{-1}(-0.35)$

$y =$ −.36 radians

(Type your answer in radians. Round to two decimal places as needed.)

25. Use a calculator to find the approximate value, in degrees, of the expression.

$\sec^{-1}(-2.63)$

$\sec^{-1}(-2.63) =$ 112.35 °

(Round to the nearest hundredth as needed.)

26. Use a calculator to find the value of y in degrees rounded to two decimal places.

$y = \tan^{-1} 16$

$y =$ 86.42 °

(Round to two decimal places as needed.)

27. Use a calculator to find the value of y in degrees rounded to two decimal places.

$y = \tan^{-1} 20$

$y =$ 87.14 °

(Round to two decimal places as needed.)

28. Use a sketch to find the exact value of y.

$y = \cos\left(\sin^{-1}\frac{2}{5}\right)$

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

- **A.** $y = \frac{\sqrt{21}}{5}$

  (Simplify your answer, including any radicals. Type an exact answer, using radicals as needed. Type an exact answer, using π as needed. Use integers or fractions for any numbers in the expression.)
- **B.** The answer is undefined.

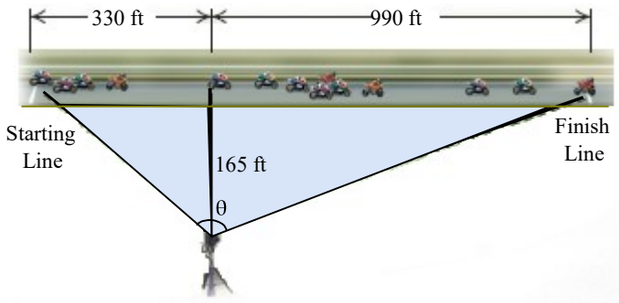
29. Use a sketch to find the exact value of the following expression.

$\sin\left[\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)\right]$

$\sin\left[\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)\right] = \frac{\sqrt{2}}{2}$

(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression. Rationalize all denominators.)

30. A video camera is set up 165 feet away from and at a right angle to a straight quarter-mile racetrack, as shown in the figure. The starting line is to the left, and the finish is to the right. Through what angle must the camera rotate to film the entire race?



The camera must rotate through an angle of 144 ° to film the entire race.
(Simplify your answer. Round to the nearest degree as needed.)

31. Watch the video and then solve the problem given below.

Click here to watch the video.[1]

Find the exact value of $\sin^{-1}\left(\sin\frac{7\pi}{6}\right)$.

$\sin^{-1}\left(\sin\frac{7\pi}{6}\right) = -\frac{\pi}{6}$ (Type an exact answer, using π as needed.)

1: http://mediaplayer.pearsoncmg.com/assets/oWPVhCD_U0fqjcljALn_RHf7xwuoufJx?clip=8

32. Watch the video and then solve the problem given below.

Click here to watch the video.[2]

Find the exact value of $\tan\left(\cos^{-1}\frac{3}{4}\right)$.

$\tan\left(\cos^{-1}\frac{3}{4}\right) = \frac{\sqrt{7}}{3}$ (Type an exact answer, using radicals as needed.)

2: http://mediaplayer.pearsoncmg.com/assets/3yx5uU3UnXj6EEZ97lAbOEqnRIfsUZRd?clip=1