

# Math 130 - Quiz 5 IC

September 25, 2019

Name key

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. You must work individually on this quiz. Do not use a calculator for any part of this quiz.

1. (3 points) Use your knowledge of the values of the trig functions at special angles to determine the exact value of each of the following.

(a)  $\tan^{-1}(1) = \boxed{\frac{\pi}{4}}$  SINCE  $\tan \frac{\pi}{4} = 1$  AND  $-\frac{\pi}{2} < \frac{\pi}{4} < \frac{\pi}{2}$

(b)  $\arcsin\left(\frac{\sqrt{3}}{2}\right) = \boxed{\frac{\pi}{3}}$  SINCE  $\sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}$  AND  $-\frac{\pi}{2} \leq \frac{\pi}{3} \leq \frac{\pi}{2}$

(c)  $\cos^{-1}(0) = \boxed{\frac{\pi}{2}}$  SINCE  $\cos \frac{\pi}{2} = 0$  AND  $0 \leq \frac{\pi}{2} \leq \pi$

2. (1 point) Because the sine and arcsine functions are inverses, Steve thought that it must be true that  $\sin(\sin^{-1}(2)) = 2$ . Is Steve correct? Explain why or why not.

No, STEVE IS WRONG. 2 IS NOT A POSSIBLE  
INPUT VALUE FOR  $\sin^{-1}x$ .  $\sin^{-1}x$  IS DEFINED  
FOR  $-1 \leq x \leq 1$ .

3. (1 point) Determine the value of  $\cos^{-1}(\cos 3\pi)$ .

$$= \cos^{-1}(\cos \pi) = \boxed{\pi}$$

WE RESTRICT  $\cos x$  TO  $0 \leq x \leq \pi$ .

# Math 130 - Quiz 5 TH

September 25, 2019

Name key

Score \_\_\_\_\_

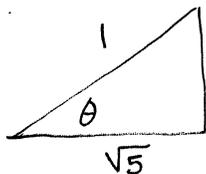
Show all work to receive full credit. Supply explanations when necessary. You must work individually on this quiz. This quiz is due September 30.

1. (1 point) Determine the exact value of  $\arcsin[\sin(9\pi/4)]$ .

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

2. (3 points) Use a right triangle to find the exact value of  $\sin(\cos^{-1}\sqrt{5})$ .

Let  $\theta = \cos^{-1}\sqrt{5}$ , THEN  $\cos \theta = \sqrt{5}$

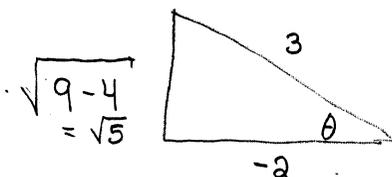


THIS IS NOT POSSIBLE.

SIDE CANNOT BE LONGER THAN  
HYPOT.  $\cos^{-1}\sqrt{5}$  DNE!

3. (3 points) Use a right triangle to find the exact value of  $\tan[\cos^{-1}(-2/3)]$ .

Let  $\theta = \cos^{-1}\left(-\frac{2}{3}\right)$ , THEN  $\cos \theta = -\frac{2}{3}$



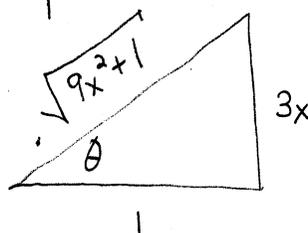
$$\tan \theta = -\frac{\sqrt{5}}{2}$$

4. (3 points) Use a right triangle to determine an algebraic expression for  $\sec[\arctan(3x)]$ .

Let  $\theta = \tan^{-1} 3x$

SO THAT

$$\tan \theta = \frac{3x}{1}$$



$$\sec \theta = \sqrt{9x^2+1}$$