

Quiz #15 SOLUTIONS

Answer all questions and show all your work.

Question 1 (3 points)

Find the exact value for

a) $\arcsin \frac{-\sqrt{2}}{2} = -\frac{\pi}{4}$

b) $\arccos \frac{-1}{2} = \frac{2\pi}{3}$

c) $\operatorname{arccot}(1) = \frac{\pi}{4}$

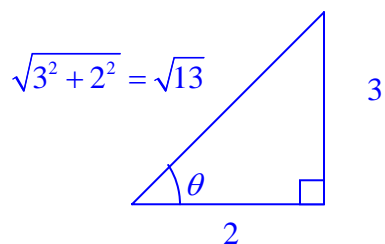
Question 2 (2 points)

Find the exact value for $\sin(\arctan \frac{3}{2})$.

$$\begin{aligned} \sin(\arctan \frac{3}{2}) &= \sin \theta \\ &= \frac{3}{\sqrt{13}} = \frac{3\sqrt{13}}{13} \end{aligned}$$

$$\arctan \frac{3}{2} = \theta$$

$$\tan \theta = \frac{3}{2}$$



Question 3 (5 points)

Verify the following identity.

$$\frac{\sec \theta - \csc \theta}{\sec \theta \csc \theta} = \sin \theta - \cos \theta$$

$$\begin{aligned} LS &= \frac{\sec \theta - \csc \theta}{\sec \theta \csc \theta} \\ &= \frac{\frac{1}{\cos \theta} - \frac{1}{\sin \theta}}{\frac{1}{\cos \theta} \frac{1}{\sin \theta}} \\ &= \frac{\frac{\sin \theta - \cos \theta}{\sin \theta \cos \theta}}{\frac{1}{\sin \theta \cos \theta}} \\ &= \frac{\sin \theta - \cos \theta}{\sin \theta \cos \theta} \cdot \frac{\sin \theta \cos \theta}{1} \\ &= \sin \theta - \cos \theta \\ &= RS \end{aligned}$$