

Math 1613 - Trigonometry

Quiz #19 - 2011.10.25

Solutions

1. Why do we need the Law of Sines when we have the Pythagorean Theorem?

The Law of Sines may be used for non-right triangles, while the Pythagorean Theorem only applies to right triangles.

2. Write the expression $\cot(\sin^{-1}(z))$ as an algebraic (nontrigonometric) expression in z . You may assume $z > 0$.

First, we set $\theta = \sin^{-1}(z)$, so we are really looking for $\cot(\theta)$, where $\sin(\theta) = z$. If $\sin(\theta) = z$, then the opposite side has length z and the hypotenuse length 1. This means the adjacent side has length $\sqrt{1 - z^2}$, and thus $\cot(\theta) = \frac{\sqrt{1-z^2}}{z}$.