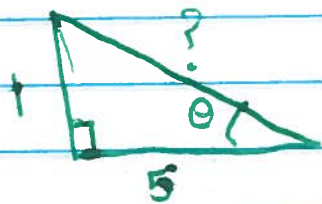


Quiz 8 MATH 1540 Fall 2018



Find $\sin(2\theta)$.

Soln: By double angle identity,

$$(*) \quad \sin(2\theta) = 2 \sin(\theta) \cos(\theta)$$

To find $\sin(\theta)$ and $\cos(\theta)$, we need to first find the hypotenuse of the triangle.

So, by Pythagorean theorem,

$$1^2 + 5^2 = ?^2$$

$$\downarrow \\ 26 = ?^2 \rightarrow ? = \sqrt{26}$$

Therefore $(*)$ tells us

$$\sin(2\theta) = 2 \cos(\theta) \sin(\theta)$$

$$= 2 \left(\frac{5}{\sqrt{26}} \right) \left(\frac{1}{\sqrt{26}} \right)$$

$$= \frac{10}{26} = \frac{5}{13}$$