

## Section 04-03-Sample Quiz-Double Angle Identities

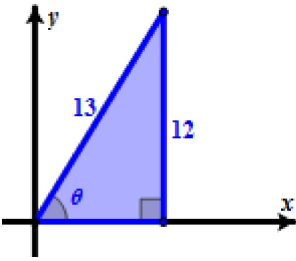
## Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_ 1. Given that  $\sin(\theta) = \frac{12}{13}$  and that  $\theta$  exists in the first quadrant, determine the exact value of  $\cos(2\theta)$

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

Use the diagram below to assist you.



- a.  $\frac{25}{169}$                       c.  $\frac{119}{169}$   
b.  $-\frac{25}{169}$                      d.  $-\frac{119}{169}$
- \_\_\_\_ 2. Given that  $\cos(\theta) = \frac{5}{13}$  and that  $\theta$  exists in the first quadrant, determine the exact value of  $\sin(2\theta)$ .

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

- a.  $\frac{12}{13}$                               c.  $\frac{24}{13}$   
b.  $\frac{60}{169}$                           d.  $\frac{120}{169}$
- \_\_\_\_ 3. Using basic and double angle trigonometric identities simplify the following expression:

$$\frac{2}{\csc(\theta) \sec(\theta)}$$

- a.  $\sin^2(\theta)$                       c.  $\sin(2\theta)$   
b.  $\cos^2(\theta)$                     d.  $\cos(2\theta)$

Name: \_\_\_\_\_

ID: A

\_\_\_ 4. Using basic and double angle trigonometric identities simplify the following expression:

$$\sin(2\theta) \sec^2(\theta)$$

- a.  $2\sin(\theta)$     c.  $2\tan(\theta)$   
b.  $2\cos(\theta)$     d.  $2\cot(\theta)$

\_\_\_ 5. A student was asked to verify the following identity.

**Verify the following identity:**

---

$$\sin(2x) + 1 = (\sin x + \cos x)^2 \quad \text{: Expand } (\sin x + \cos x)^2$$

---

$$\sin(2x) + 1 = \sin^2 x + \cos^2 x \quad \text{: Replace } \sin^2 x + \cos^2 x \text{ with } 1$$

---

$$\sin(2x) + 1 = 1 \quad \text{: Identity must be false}$$

---



Where did the student make a mistake or is the student correct?

- a. The student didn't expand  $(\sin x + \cos x)^2$  correctly.  
b. The student shouldn't have replaced  $\sin^2 x + \cos^2 x$  with 1.  
c. You can't verify the identity because the identity is false.