Score: 1 of 1 pt

6.1.3

Complete the following statements.

a. $\sin^2 x + \_\_\_\_ = 1$ **b.** $1 + \_\_\_\_ = \sec^2 x$ **c.** $\csc^2 x - \cot^2 x = \_\_\_\_$

- A. $\sin^2 x + \cot^2 x = 1$
- B. $\sin^2 x + \cos^2 x = 1$ ✔
- C. $\sin^2 x + \tan^2 x = 1$
- D. $\sin^2 x + \csc^2 x = 1$

b. Select the correct response from the choices below.

Score: 1 of 1 pt 1 of 32

6.1.3

Complete the following statements.

a. $\sin^2 x + \_\_\_\_ = 1$ **b.** $1 + \_\_\_\_ = \sec^2 x$ **c.** $\csc^2 x - \cot^2 x = \_\_\_\_$

- C. $\sin^2 x + \tan^2 x = 1$
- D. $\sin^2 x + \csc^2 x = 1$

b. Select the correct response from the choices below.

- A. $1 + \cos^2 x = \sec^2 x$
- B. $1 + \csc^2 x = \sec^2 x$
- C. $1 + \tan^2 x = \sec^2 x$ ✔
- D. $1 + \cot^2 x = \sec^2 x$

c. Select the correct response from the choices below.

- A. $\csc^2 x - \cot^2 x = -1$
- B. $\csc^2 x - \cot^2 x = 2$
- C. $\csc^2 x - \cot^2 x = 0$
- D. $\csc^2 x - \cot^2 x = 1$ ✔

Question is complete.

6.1.25

Simplify so that no quotients appear in the final expression.

$$\frac{\tan\theta - \sin\theta}{\sin\theta\tan\theta}$$

Choose the correct answer below.

- A. $\csc\theta\cot\theta$
- B. $\cot\theta$
- C. $-\cot\theta\csc\theta$
- D. $\csc\theta - \cot\theta$
- E. $\cot\theta - \csc\theta$
- F. $\sin\theta - \tan\theta$

6.1.27

Simplify the expression $\cos(-x) \cdot \tan(-x)$.

Choose the correct simplified form of $\cos(-x) \cdot \tan(-x)$.

- A. $\tan x$
- B. $\sin x$
- C. $-\sin x$
- D. $\cos x$

6.1.30

Write the expression in terms of sine and cosine, and then simplify so that no quotients appear in the final expression.

$$-\sin^2\theta\left(-1-\cot^2\theta\right)$$

Choose the correct answer below.

- A. $\sec^2\theta$
- B. $-\dfrac{\cos^2\theta}{\sin^2\theta}$
- C. $\tan^2\theta$
- D. $\dfrac{\cos^2\theta}{\sin^2\theta}$
- E. 1
- F. -1

6.1.33

Simplify the expression.

$$(\tan x+\sec x)(\tan x-\sec x)$$

$(\tan x+\sec x)(\tan x-\sec x) = -1$

(Use integers or decimals for any numbers in the expression.)

Score: 1 of 1 pt

5 of 32

6.1.33

Simplify the expression.

$(\tan x + \sec x)(\tan x - \sec x)$

$(\tan x + \sec x)(\tan x - \sec x) = -1$

(Use integers or decimals for any numbers in the expression.)

Score: 0 of 1 pt

7 of 32

Test

6.1.35

Factor and simplify.

$\cos^4 x - \sin^4 x$

Choose the most simplified form of $\cos^4 x - \sin^4 x$ below.

A. $1 - 2\sin^2 x$

B. $(\cos^2 x - \sin^2 x)(\cos^2 x + \sin^2 x)$

C. $\sin^2 x$

D. $4\cos x - 4\sin x$

The factoring thus far is correct, but one of these factors can be simplified by the use of a Pythagorean identity.

OK

You can swap cos^2x+sin^2x to = 1, then you can swap cos^2x with 1-sin^2x. Then you'll have 1-sin^2x-sin^2x which equals the answer above.

Score: 1 of 1 pt

6.1.36

Multiply and simplify.

$\sin x \cos x(\tan x + \csc x)$

$\sin x \cos x(\tan x + \csc x) = \sin^2 x + \cos x$

Score: 1 of 1 pt

6.2.1

Complete the following statement.

$\sin(A+B) =$ _________

Choose the correct answer below.

- A. $\sin(A+B) = \sin A \cos B - \cos A \sin B$
- B. $\sin(A+B) = \cos A \cos B - \sin A \sin B$
- C. $\sin(A+B) = \cos A \cos B + \sin A \sin B$
- D. $\sin(A+B) = \sin A \cos B + \cos A \sin B$

Score: 1 of 1 pt

6.2.2

Complete the following statement.

$\cos A \cos B - \sin A \sin B =$ ________

Choose the correct answer below.

- A. $\cos A \cos B - \sin A \sin B = \cos(A+B)$
- B. $\cos A \cos B - \sin A \sin B = \cos(A-B)$
- C. $\cos A \cos B - \sin A \sin B = \sin(A-B)$
- D. $\cos A \cos B - \sin A \sin B = \sin(A+B)$

Score: 1 of 1 pt

6.2.3

Complete the following statement.

$\tan(A+B) =$ ________

Choose the correct answer below.

- A. $\tan(A+B) = \dfrac{\tan A - \tan B}{1 + \tan A \tan B}$
- B. $\tan(A+B) = \dfrac{\tan A + \tan B}{1 - \tan A \tan B}$
- C. $\tan(A+B) = \dfrac{\tan A - \tan B}{1 - \tan A \tan B}$
- D. $\tan(A+B) = \dfrac{\tan A + \tan B}{1 + \tan A \tan B}$

Score: 1 of 1 pt

6.2.5

True or False.

$$\sin\left[\frac{\pi}{2}+x\right]=\cos x$$

Choose the correct answer below.

- A. True, because the value of the sine function of x is equal to the cosine of the supplement of x.
- B. False, because the value of the sine function of x is equal to the cosecant of the supplement of x.
- C. False, because the value of the sine function of x is equal to the tangent of the complement of x.
- D. True, because the value of the sine function of x is equal to the cosine of the complement of x.

Score: 1 of 1 pt

6.2.7

Use one or more of the six sum and difference identities to find the exact value of the expression.

$$\sin(180^\circ-45^\circ)$$

$\sin(180^\circ-45^\circ)=\dfrac{\sqrt{2}}{2}$

(Type an exact answer, using radicals as needed. Simplify your answer.)

Score: 0 of 1 pt | 14 of 32 | T

6.2.11

Use one or more of the six sum and difference identities to find the exact value of the expression.

$\sin(105°)$

$\sin(105°) = \frac{\sqrt{6}+\sqrt{2}}{4}$

(Type an exact answer, using fraction, radicals and a rationalized denominator. Simplify your answer.)

You answered: $\frac{7\pi}{12}$

Score: 1 of 1 pt | 15 of 32

6.2.28

Verfiy the following identity.

$\cos(\pi - \theta) = -\cos\theta$

Which of the following four statements establishes the identity?

- A. $\cos(\pi - \theta) = \sin\pi\cos\theta + \cos\pi\sin\theta = -\cos\theta$
- B. $\cos(\pi - \theta) = \sin\pi\cos\theta - \cos\pi\sin\theta = -\cos\theta$
- C. $\cos(\pi - \theta) = \cos\pi\cos\theta + \sin\pi\sin\theta = -\cos\theta$
- D. $\cos(\pi - \theta) = \cos\pi\cos\theta - \sin\pi\sin\theta = -\cos\theta$

Score: 1 of 1 pt

6.2.29

Establish the identity $\sin\left(\frac{3\pi}{2}+\theta\right) = -\cos\theta$.

Which of the following four statements establishes the identity?

- A. $\sin\left(\frac{3\pi}{2}+\theta\right) = \sin\frac{3\pi}{2}\sin\theta + \cos\frac{3\pi}{2}\cos\theta = (0)\sin\theta + (-1)\cos\theta = -\cos\theta$
- B. $\sin\left(\frac{3\pi}{2}+\theta\right) = \sin\frac{3\pi}{2}\sin\theta - \cos\frac{3\pi}{2}\cos\theta = (-1)\cos\theta - (0)\sin\theta = -\cos\theta$
- C. $\sin\left(\frac{3\pi}{2}+\theta\right) = \sin\frac{3\pi}{2}\cos\theta + \cos\frac{3\pi}{2}\sin\theta = (-1)\cos\theta + (0)\sin\theta = -\cos\theta$
- D. $\sin\left(\frac{3\pi}{2}+\theta\right) = \sin\frac{3\pi}{2}\cos\theta - \cos\frac{3\pi}{2}\sin\theta = (-1)\cos\theta - (0)\sin\theta = -\cos\theta$

Score: 1 of 1 pt

6.2.47

Find the exact value of the expression

$$\sin\frac{5\pi}{12}\cos\frac{\pi}{3} + \cos\frac{5\pi}{12}\sin\frac{\pi}{3}$$

$\sin\frac{5\pi}{12}\cos\frac{\pi}{3} + \cos\frac{5\pi}{12}\sin\frac{\pi}{3} = \frac{\sqrt{2}}{2}$

(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression.)

Score: 1 of 1 pt | 18 of 32

6.3.1

Complete the following statement.

The double-angle identity for $\sin 2x$ is $\sin 2x =$ ________.

$\sin 2x = 2\sin x \cos x$

Score: 1 of 1 pt | 19 of 32 | Test Score: 90.63%, 29 of 32 pts

6.3.2

Complete the following statement.

In the double-angle identity $\cos 2x = \cos^2 x - \sin^2 x$, replace $\cos^2 x$ with $1 - \sin^2 x$ to obtain a double-angle identity $\cos 2x =$ _______ in terms of $\sin^2 x$. Solve this identity for $\sin^2 x$ to obtain the power-reducing identity $\sin^2 x =$ _______.

$\cos 2x = 1 - 2\sin^2 x$

$\sin^2 x = \frac{1 - \cos 2x}{2}$

Score: 1 of 1 pt | 20 of 32 | Test Score: 90.63%, 29 of 32

6.3.3

Complete the following statement.

The identity for $\cos 2x$ in terms of $\cos^2 x$ is $\cos 2x =$ _______. Solve this identity for $\cos^2 x$ to obtain the power-reducing identity $\cos^2 x =$ _______.

$\cos 2x = 2\cos^2 x - 1$

$\cos^2 x = \frac{1 + \cos 2x}{2}$

Score: 1 of 1 pt

6.3.5

State whether the following statement is true or false.

$$\frac{1}{2}\tan 2x = \tan x$$

Choose the correct answer below.

- A. False, because the double-angle formula for tangent is not applied correctly.
- B. False, because $\frac{1}{2}\tan 2x = \tan^2 x$.
- C. False, because $\frac{1}{2}\tan 2x = \tan x$.
- D. True, because the double-angle formula for tangent is applied correctly.

Score: 1 of 1 pt T

6.4.1

Complete the following.

We can rewrite the product of two sines as a difference of two cosines by using the identity $\sin x \sin y =$ ______.

$$\sin x \sin y = \frac{1}{2}[\cos(x-y) - \cos(x+y)]$$

Score: 1 of 1 pt

6.4.5

Identify whether the following equation is true or false.

$\sin x + \sin y = \sin(x+y)$

Choose the correct answer below.

- A. True, because $\sin x + \sin y = 2\sin\left(\frac{x+y}{2}\right)\cos\left(\frac{x-y}{2}\right)$ which is equal to $\sin(x+y)$.
- B. False, because $\sin x + \sin y = \sin(x+y)\cos(x-y)$ and $\sin(x+y) = \sin x\cos y + \cos x \sin y$.
- C. False, because $\sin x + \sin y = 2\sin\left(\frac{x+y}{2}\right)\cos\left(\frac{x-y}{2}\right)$ and $\sin(x+y) = \sin x\cos y + \cos x\sin y$.
- D. True, because $\sin x + \sin y = \sin x\cos y + \cos x\sin y$ which is equal to $\sin(x+y)$.

Score: 1 of 1 pt

6.4.15

Use the product-to-sum identities to rewrite the expression.

$\sin\left(\frac{\pi}{3}\right)\cos\left(\frac{\pi}{7}\right)$

Which of the following is equivalent to $\sin\left(\frac{\pi}{3}\right)\cos\left(\frac{\pi}{7}\right)$?

- A. $\frac{1}{2}\left(\sin\frac{10\pi}{21} - \sin\frac{4\pi}{21}\right)$
- B. $\frac{1}{2}\left(\cos\frac{10\pi}{21} + \cos\frac{4\pi}{21}\right)$
- C. $\sin\frac{10\pi}{21} + \sin\frac{4\pi}{21}$
- D. $\frac{1}{2}\left(\sin\frac{10\pi}{21} + \sin\frac{4\pi}{21}\right)$

Score: 1 of 1 pt

6.4.19

Express the given product as a sum containing only sines or cosines.

$\sin(8\theta)\cos(2\theta)$

$\sin(8\theta)\cos(2\theta) = \frac{1}{2}[\sin(10\theta) + \sin(6\theta)]$

(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression.)

Score: 1 of 1 pt

6.4.25

Find the exact value of the expression $\sin 135^\circ \cdot \cos 75^\circ$.

Choose the correct answer below.

- A. $\frac{\sqrt{3}}{2}$
- B. $\frac{\sqrt{3}-1}{4}$
- C. $-\frac{1}{2}$
- D. $\frac{\sqrt{2}}{2}$

Score: 1 of 1 pt 27 of 32 **Test Score:** 90.63%, 29 of 32 pt

6.5.13

Find all solutions of the following equation.

$\cot x = \sqrt{3}$

All solutions of the equation $\cot x = \sqrt{3}$ are given by $x = \frac{\pi}{6} + n\pi$.

(Type an expression using n as the variable. Type any angle measures in radians. Use angle measures greater than or equal to 0 and less than 2π.)

Score: 0 of 1 pt 28 of 32 **Test Score:** 90.63%, 29 of 32

6.5.15

Solve the equation. Give a general formula for all the solutions.

$\cos x = -\frac{1}{2}$

Give a general formula for all the solutions by using angle(s) in the interval $[0,2\pi)$, and adding multiples of some integer n.

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $x = \frac{2\pi}{3} + 2n\pi, \frac{4\pi}{3} + 2n\pi$

(Simplif... ...using π as needed. Type your answer in radians. Use integers or fractions for any numbers in the exp... as needed.)

B. The

You answered: $\frac{2\pi}{3}, \frac{4\pi}{3}$

Correct answer: $\frac{2\pi}{3} + 2n\pi, \frac{4\pi}{3} + 2n\pi$

I had the answer right on this, the only reason it's wrong was they didn't specify well enough to tell me that they wanted those 2n(pi) things afterward. So I understand whats going on.

Score: 1 of 1 pt

6.5.17

Find all solutions of the equation. Express the solutions in degrees.

$\tan x = -\sqrt{3}$

Select the correct choice given below.

- A. $x = 30^\circ + 360^\circ k$, where k is any integer
- B. $x = 30^\circ + 180^\circ k$, where k is any integer
- C. $x = 120^\circ + 360^\circ k$, where k is any integer
- D. $x = 120^\circ + 180^\circ k$, where k is any integer

Score: 1 of 1 pt

6.5.19

Find all solutions of the equation. Express the solutions in degrees.

$\sin x = -\frac{1}{2}$

Select the correct choice given below.

- A. $x = 30^\circ + 360^\circ k$ or $x = 150^\circ + 360^\circ k$, where k is any integer
- B. $x = 210^\circ + 360^\circ k$ or $x = 330^\circ + 360^\circ k$, where k is any integer
- C. $x = 30^\circ + 180^\circ k$ or $x = 150^\circ + 180^\circ k$, where k is any integer
- D. $x = 210^\circ + 180^\circ k$ or $x = 330^\circ + 180^\circ k$, where k is any integer

Score: 1 of 1 pt

6.5.21

Find all solutions of the equation. Express the solutions in degrees.

$\sin x = 1$

Select the correct choice given below.

- A. $x = 0° + 180°n$, where n is any integer
- B. $x = 0° + 360°n$, where n is any integer
- C. $x = 90° + 180°n$, where n is any integer
- D. $x = 90° + 360°n$, where n is any integer

Score: 1 of 1 pt

6.5.23

Find all solutions of the equation. Express the solutions in degrees.

$\frac{1}{2}\sec x + 1 = 0$

Select the correct choice given below.

- A. $x = 120° + 180°n$ or $x = 240° + 360°n$, where n is any integer
- B. $x = 120° + 360°n$ or $x = 240° + 360°n$, where n is any integer
- C. $x = 45° + 360°n$ or $x = 315° + 180°n$, where n is any integer
- D. $x = 45° + 180°n$ or $x = 315° + 180°n$, where n is any integer

This is solved by first subtracting 1, then dividng secx. Then divide out the -1 on the right side to the ½ to make it -1/2 and then you can refer to the unit circle.