Warm up

Feb 13-7:19 PM

GO COUGARS!

p 379 Homework Questions

In Exercises 1–14, use the given values to evaluate (if possible) all six trigonometric functions.

13. $\sin\theta = -1, \quad \cot\theta = 0$

In Exercises 15–20, match the trigonometric expression with one of the following.

(a) $\sec x$ (b) -1 (c) $\cot x$
(d) 1 (e) $-\tan x$ (f) $\sin x$

15. $\sec x \cos x$
17. $\cot^2 x - \csc^2 x$
19. $\frac{\sin(-x)}{\cos(-x)}$

In Exercises 21–26, match the trigonometric expression with one of the following.

(a) $\csc x$ (b) $\tan x$ (c) $\sin^2 x$
(d) $\sin x \tan x$ (e) $\sec^2 x$ (f) $\sec^2 x + \tan^2 x$

21. $\sin x \sec x$
23. $\sec^4 x - \tan^4 x$
25. $\frac{\tan^2 x - 1}{\sin^2 x}$

In Exercises 27–44, use the fundamental identities to simplify the expression. There is more than one correct form of each answer.

27. $\cot\theta \sec\theta$
29. $\sin\phi(\csc\phi - \sin\phi)$
31. $\frac{\cos x}{\csc x}$
33. $\frac{1-\sin^2 x}{\cot^2 x - 1}$
35. $\sec\alpha - \frac{\sin\alpha}{\tan\alpha}$
37. $\sin\beta\tan\beta + \cos\beta$
43. $\cot a \sin a + \tan a \cos a$

In Exercises 45–56, factor the expression and use the fundamental identities to simplify. There is more than one correct form of each answer.

45. $\tan^2 x - \tan^2 x \sin^2 x$
47. $\sec^2 x \left(\frac{1}{\sec^2 x}\right)$
49. $\frac{\sec^2 x - 1}{\sec x - 1}$
51. $\tan^4 x + 2\tan^2 x + 1$
53. $\sin^4 x - \cos^4 x$
55. $\csc^3 x - \csc^2 x - \csc x + 1$

In Exercises 57–60, perform the multiplication and use the fundamental identities to simplify. There is more than one correct form of each answer.

57. $(\sin x + \cos x)^2$
59. $(2\csc x + 2)(2\csc x - 2)$

$\sec^2\theta - \tan^2\theta = 1$
$\sec^2 x - \tan^2 x = 1$

$\sin^2\theta + \cos^2\theta = 1$

$1 + \cot^2 x = \csc^2 x$

$\sec a \sin a \cot a = 1$

$(\tan^2 x + 1)(\tan^2 x + 1)$
$\sec^2 x \quad \sec^2 x$
$\sec^4 x$

$(\sin x + \cos x)(\sin x + \cos x)$
$\sin^2 x + \sin x\cos x + \sin x\cos x + \cos^2 x$
$1 + 2\sin x\cos x$

Feb 2-9:51 PM

5.1 Simplifying Trigonometric Expressions day 2

Feb 13-7:19 PM

Simplifying to non-fraction form

using Conjugates

$\frac{2+4i}{5-i} \cdot \frac{5+i}{5+i}$

$\frac{3}{2+\sqrt{3}} \cdot \frac{2-\sqrt{3}}{2-\sqrt{3}}$

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

$\frac{\cos^2 x(1+\sin x)}{1-\sin^2 x}$

$\frac{\cos^2 x(1+\sin x)}{\cos^2 x}$

$1+\sin x$

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

$\frac{(1-\sin x)(1+\sin x)}{1-\sin x}$

$1+\sin x$

Feb 13-7:22 PM

Using Substitution

$x = 5\sin\theta \quad 0 < \theta < \frac{\pi}{2}$ *to express* $\sqrt{25 - x^2}$

$\sqrt{25-(5\sin\theta)^2}$

$\sqrt{25-25\sin^2\theta}$

$\sqrt{25(1-\sin^2\theta)}$

$\sqrt{25\cos^2 x}$

$5\cos x$

Feb 13-7:23 PM

Using Identities to rewrite an expression

$\ln|\sec\theta| + \ln|\cot\theta|$ as a single logarithm

$\ln(\sec\theta \cdot \cot\theta)$

$\ln\left(\frac{1}{\cos\theta} \cdot \frac{\cos\theta}{\sin\theta}\right)$

$\ln\left(\frac{1}{\sin\theta}\right)$

$\ln|(\csc\theta)|$

Feb 13-7:28 PM

Cofunction Identities

$$\sin\left(\frac{\pi}{2}-\theta\right)=\cos\theta \qquad \cos\left(\frac{\pi}{2}-\theta\right)=\sin\theta$$

$$\tan\left(\frac{\pi}{2}-\theta\right)=\cot\theta \qquad \cot\left(\frac{\pi}{2}-\theta\right)=\tan\theta$$

$$\csc\left(\frac{\pi}{2}-\theta\right)=\sec\theta \qquad \sec\left(\frac{\pi}{2}-\theta\right)=\csc\theta$$

Feb 13-7:31 PM

Simplify

$$\cot\left(\frac{\pi}{2}-x\right)\cos x$$

$\tan x \cos x$

$\frac{\sin x}{\cos x} \cdot \cos x$

1

$\sin x$

Feb 13-7:39 PM

Even Trig Functions:

cos x sec x $\cos x = \cos(-x)$

Odd Trig Functions:

tan x sin x $-\sin x = \sin(-x)$

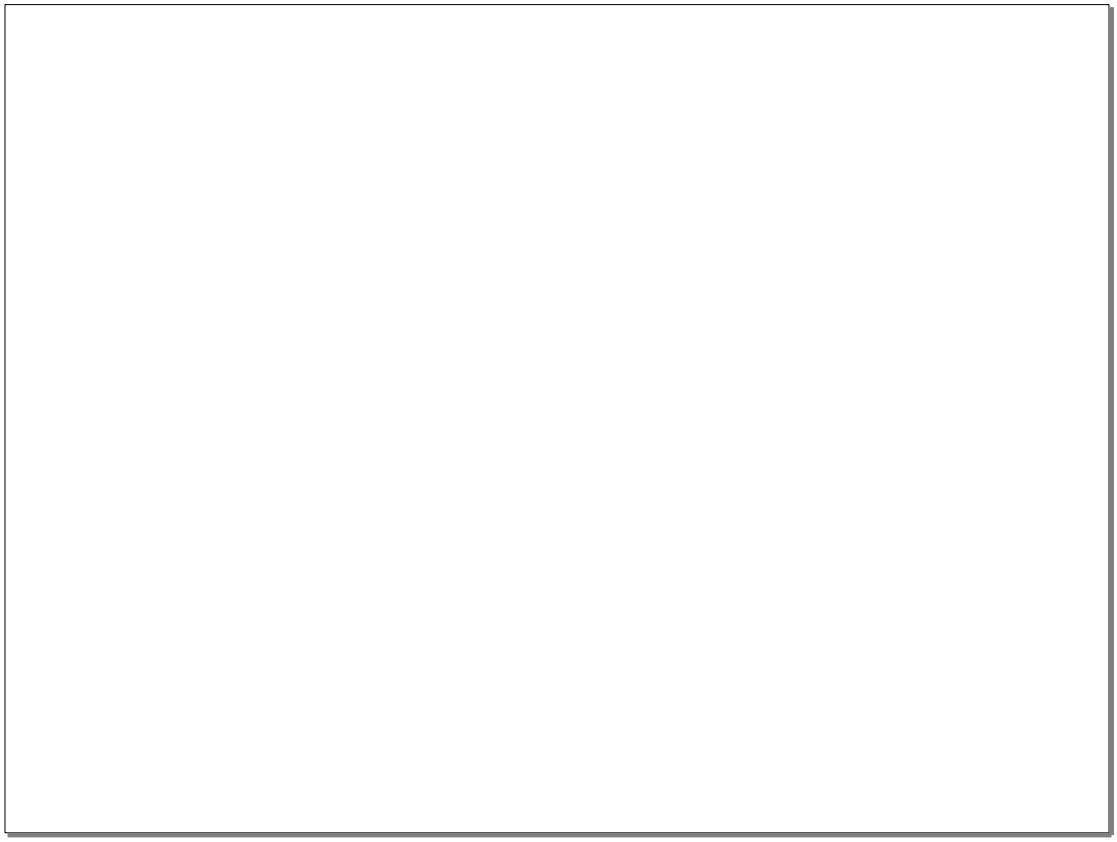
cot x csc x $-\tan x = \tan(-x)$

Feb 13-7:40 PM

HOMEWORK

p 379 37, 39, 61-67 odd, 73, 75 algebraically, 79, 81, 91, 93

Feb 2-9:51 PM



Feb 13-7:41 PM