

GO COUGARS!



Homework Questions

WB p 126 answers

1a. $\frac{\pi}{3}, \frac{2\pi}{3}$ b. 0 g. $\frac{5\pi}{6}, \frac{7\pi}{6}$ k. $\frac{\pi}{2}$ l. $\frac{\pi}{3}, \frac{5\pi}{3}$

2a. 1.744, 4.539 b. 0.588, 2.554

3c. 3.481, 5.943 g. $\frac{3\pi}{2}$

4. 1.823, 4.460 6. $\frac{\pi}{2}, \frac{3\pi}{2}$ 10. $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$

12. $\frac{7\pi}{24}, \frac{11\pi}{24}, \frac{19\pi}{24}, \frac{23\pi}{24}, \frac{31\pi}{24}, \frac{35\pi}{24}, \frac{43\pi}{24}, \frac{47\pi}{24}$ 13. 0 $\frac{2\pi}{3}, \frac{4\pi}{3}$

15. $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$ 16. $\frac{7\pi}{18}, \frac{11\pi}{18}, \frac{19\pi}{18}, \frac{23\pi}{18}, \frac{31\pi}{18}, \frac{35\pi}{18}$

17. $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$ 20. 0 $\pi, \frac{7\pi}{6}, \frac{11\pi}{6}$

21. 0 $\frac{\pi}{3}, \frac{7\pi}{18}, \frac{11\pi}{18}, \frac{2\pi}{3}, \pi, \frac{19\pi}{18}, \frac{23\pi}{18}, \frac{4\pi}{3}, \frac{5\pi}{3}, \frac{31\pi}{18}, \frac{35\pi}{18}$

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GO COUGARS!

Homework Questions

$\sin^2 x + 3 \sin x + 1 = 0$
 $2x^2 + 3x + 1 = 0$
 $(2x+1)(x+1) = 0$
 $\sin x = -\frac{1}{2}$ or $\sin x = -1$
 $x = \frac{7\pi}{6}, \frac{11\pi}{6}$ or $x = \frac{3\pi}{2}$

$\csc^2 x - 3 \csc x - 4 = 0$
 $(\csc x - 4)(\csc x + 1) = 0$
 $\csc x = 4$ or $\csc x = -1$
 $\sin x = \frac{1}{4}$ or $\sin x = -1$
 $x = \arcsin(\frac{1}{4})$ or $x = \frac{3\pi}{2}$

In Exercises 87-88, use a graphing utility to graph each function in the interval $[0, 2\pi]$, then write an equation whose solutions are the points of intersection of the graphs, and (c) use the intersect feature of the graphing utility to find the points of intersection (to four decimal places).
 87. $y = \sin 2x, y = x^2 - 2x$
 88. $y = \cos x, y = x^2 - 4x$
 89. $y = \cos^2 x, y = x^2 - 4x - 1$
 In Exercises 89-92, solve the multiple-angle equation.
 89. $\cos \frac{x}{2} = 0$
 90. $\sin 2x = 1$
 91. $\cos 2x = -1$
 92. $\sin \frac{x}{2} = 0$
 93. $\sin 2x = 1$
 94. $\cos 2x = -1$
 95. $\sin 2x = 1$
 96. $\cos 2x = -1$
 97. $\sin 2x = 1$
 98. $\cos 2x = -1$
 99. $\sin 2x = 1$
 100. $\cos 2x = -1$
 In Exercises 85-88, use a graphing utility to approximate the solutions (to three decimal places) of the equation in the given interval.
 85. $3 \tan^2 x + 5 \tan x - 4 = 0, [0, \pi]$
 86. $\cos^2 x - 2 \cos x + 1 = 0, [0, \pi]$
 87. $\cos^2 x - 2 \sin x + 1 = 0, [-\frac{\pi}{2}, \frac{\pi}{2}]$
 88. $2 \sec^2 x + \sec x - 6 = 0, [-\frac{\pi}{2}, \frac{\pi}{2}]$

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

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5.4 Sum and Difference Formulas

find exact values given an angle - *find a ratio*

condense

verify identities

find exact values given ratios - *find a ratio*

Feb 26-7:12 AM

$$\sin(u \pm v) = \sin u \cos v \pm \cos u \sin v$$

$$\cos(u \pm v) = \cos u \cos v \mp \sin u \sin v$$

$$\tan(u \pm v) = \frac{\tan u \pm \tan v}{1 \mp \tan u \tan v} = \frac{\sin(u \pm v)}{\cos(u \pm v)}$$

*u & v
are angles!*

$$\sin 106 \cos 16 - \cos 106 \sin 16$$

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'distributing the trig function' is not a thing!
 sin, cos, tan, etc is not a constant,
 they are relationships based on the sides
 and angles of a triangle

SO... $\sin(30^\circ + 60^\circ) = \sin 90^\circ$

but $\sin 30^\circ + \sin 60^\circ \neq \sin 90^\circ$

$$\frac{1}{2} + \frac{\sqrt{3}}{2} = 1$$

$$\frac{1+\sqrt{3}}{2} \neq 1$$

Mar 11-6:21 AM

The formulas are used to find the exact value w/o calculator.

1. $\cos(105^\circ) = \cos(45+60)$

$$\cos 45 \cos 60 - \sin 45 \sin 60$$

$$\left(\frac{1}{\sqrt{2}}\right)\left(\frac{1}{2}\right) - \left(\frac{1}{\sqrt{2}}\right)\left(\frac{\sqrt{3}}{2}\right)$$

$$\frac{1}{2\sqrt{2}} - \frac{\sqrt{3}}{2\sqrt{2}}$$

$$\frac{1 - \sqrt{3}}{2\sqrt{2}}$$

Book: $\frac{\sqrt{2}-\sqrt{6}}{4}$

2. $\sin \frac{5\pi}{12} = \left(\frac{\frac{3\pi}{4} + \frac{2\pi}{6}}{\frac{\pi}{4} + \frac{\pi}{6}}\right)$

$$\sin \frac{\pi}{4} \cos \frac{\pi}{6} + \cos \frac{\pi}{4} \sin \frac{\pi}{6}$$

$$\left(\frac{1}{\sqrt{2}}\right)\left(\frac{\sqrt{3}}{2}\right) + \left(\frac{1}{\sqrt{2}}\right)\left(\frac{1}{2}\right)$$

$$\frac{\sqrt{3} + 1}{2\sqrt{2}}$$

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$$3. \sin 106^\circ \cos 16^\circ - \cos 106^\circ \sin 16^\circ$$

$$\begin{aligned} & \sin(106 - 16) \\ & \sin(90) \\ & 1 \end{aligned}$$

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These formulas can also be used to prove identities.

$$4. \cos\left(\frac{\pi}{2} - x\right) = \sin x$$

$$\cos \frac{\pi}{2} \cos x + \sin \frac{\pi}{2} \sin x$$

$$0(\cos x) + 1(\sin x)$$

$$0 + \sin x$$

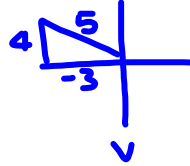
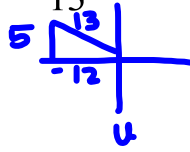
$$\sin x = \sin x \quad \checkmark$$

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And....to evaluate trig angle sums and differences.

5. Given $\sin u = \frac{5}{13}$ and $\cos v = -\frac{3}{5}$ in QII find:

$\sin(u - v)$



$$\sin u \cos v - \cos u \sin v$$

$$\left(\frac{5}{13}\right)\left(-\frac{3}{5}\right) - \left(-\frac{12}{13}\right)\left(\frac{4}{5}\right)$$

$$\frac{-15}{65} - \left(-\frac{48}{65}\right)$$

$$\frac{-15 + 48}{65}$$

$$\frac{33}{65}$$

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HOMework



p 384 3, 7, 15, 21, 23-29 odd,
35-41 odd, 47, 52, 63

Due Wednesday

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