Trig Review Ch. 7 (if time)

Quiz 7.7 Mon.
Test Ch. 7 Tues.

For Thurs. SGR o

Solve each equation for $0° \le x < 360°$.

34. $\tan x + 1 = \sec x$

$$\frac{\sin x}{\cos x} + 1 = \frac{1}{\cos x}$$

$$\cancel{\cos x}\,\frac{\sin x + \cos x}{\cancel{\cos x}} = \frac{1}{\cancel{\cos x}}\,\cancel{\cos x}$$

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

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

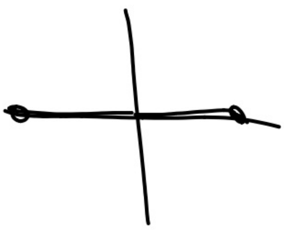
$$2\sin x\cos x + 1 = 1$$

$$-1 \quad -1$$

$$\sin 2x = 0$$

$$2x = 0 \quad x = 0$$

$$2x = 180 \quad x = 90$$



Solve each equation for all real values of *x*.

37. $\sin x \tan x - \frac{\sqrt{2}}{2} \tan x = 0$

Find the distance between the point with the given coordinates and the line with the given equation.

48. $(5, 6)$, $2x - 3y + 2 = 0$

Find the distance between the parallel lines with the given equations.

52. $y = \frac{x}{3} - 6$

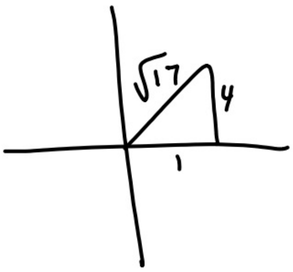
$y = \frac{x}{3} + 2$

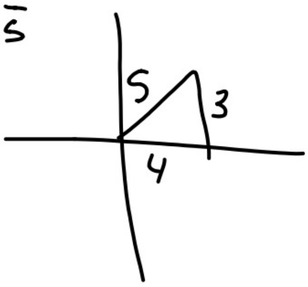
Use the given information to determine the trigonometric value. In each case, $0° < \theta < 90°$.

11. If $\sin\theta = \frac{1}{2}$, find $\csc\theta$. $= \frac{2}{1}$

12. If $\tan\theta = \frac{4}{1}$, find $\sec\theta$. $\frac{hyp}{a} = \sqrt{17}$

13. If $\csc\theta = \frac{5}{3}\frac{h}{o}$, find $\cos\theta$. $= \frac{4}{5}$





Verify that each equation is an identity.

16. $\cos^2 x + \tan^2 x \cos^2 x = 1$

17. $\frac{1 - \cos\theta}{1 + \cos\theta} = (\csc\theta - \cot\theta)^2$

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

$$= \left(\frac{1}{\sin\theta} - \frac{\cos\theta}{\sin\theta}\right)\left(\frac{1}{\sin\theta} - \frac{\cos\theta}{\sin\theta}\right)$$

$$\frac{1-\cos\theta}{1+\cos\theta} = \left(\frac{1-\cos\theta}{\sin\theta}\right)\left(\frac{1-\cos\theta}{\sin\theta}\right)$$

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

$$\frac{1-\cos\theta}{1+\cos\theta} = \csc^2\theta - 2\csc\theta\cot\theta + \cot^2\theta$$

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

$$1 + 2\cot^2\theta - \frac{2\cos\theta}{\sin^2\theta}$$

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

$$\frac{\sin^2\theta + 2\cos^2\theta - 2\cos\theta}{\sin^2\theta}$$

*Solution posted on website

Use sum or difference identities to find the exact value of each trigonometric function.

20. cos 195° **21.** cos 15°

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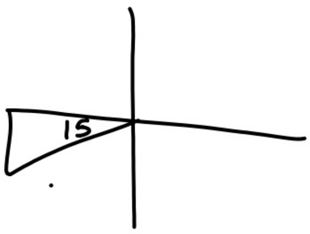


$$\cos(15) = \cos 60 \cos 45 + \sin 60 \sin 45$$

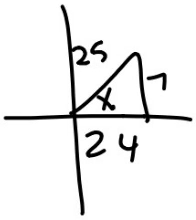
$$(60-45) \quad = \frac{1}{2} \cdot \frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2}$$

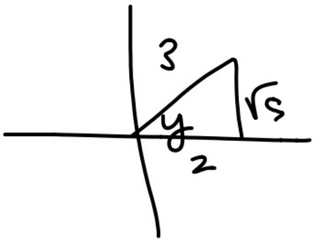
$$= \left(\frac{\sqrt{2} + \sqrt{6}}{4}\right)$$

Find each exact value if $0 < x < \frac{\pi}{2}$ and $0 < y < \frac{\pi}{2}$.

24. $\cos(x - y)$ if $\sin x = \frac{7}{25}$ and $\cos y = \frac{2}{3}$

$$\frac{24}{25} \cdot \frac{2}{3} + \frac{7}{25} \cdot \frac{\sqrt{5}}{3}$$





$$\frac{48 + 7\sqrt{5}}{75}$$

$7^2 + x^2 = 25^2$

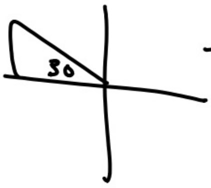
$2^2 + y^2 = 3^2$

REVIEW EXERCISES

Use a half-angle identity to find the exact value of each function.

26. $\cos 75°$ **27.** $\sin \frac{7\pi}{8}$

1 $\sqrt{\frac{1+\cos 150}{2}}$

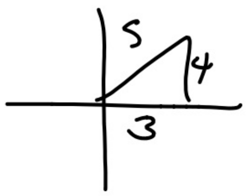


$+$ $\sqrt{\frac{1-\frac{\sqrt{3}}{2}}{2}}$

If θ is an angle in the first quadrant and $\cos\theta = \frac{3}{5}$, find the exact value of each function.

30. $\sin 2\theta$

31. $\cos 2\theta$



$$2 \cdot \frac{4}{5} \cdot \frac{3}{5} = \frac{24}{25}$$

S6 R0 11-39 odds

49, 51