

Friday May 13th

Checklist



Complete the following:

□ Unit Circle Worksheet C

□ Simplifying Trig Identities
(27 questions)

□ Trigonometric Identities 1
(9 questions)

□ TENMARKS: Solving Right
Triangles

(The sub has your username & password if
needed)

*ALL due by Monday! *

Unit Circle Worksheet C

Name _____
Period _____

The given point P is located on the Unit Circle. State the quadrant and find the angle θ , also $\sin \theta$, $\cos \theta$ and $\tan \theta$.

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

Quad:

$\sin \theta$:

$\cos \theta$:

$\tan \theta$:

2) $P(0, -1)$

Quad:

$\sin \theta$:

$\cos \theta$:

$\tan \theta$:

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

Quad:

$\sin \theta$:

$\cos \theta$:

$\tan \theta$:

Find the exact value of each function.

4) $\cos\left(\frac{7\pi}{4}\right)$

5) $\sin -30^\circ$

6) $\sin\left(\frac{-2\pi}{3}\right)$

7) $\cos(600^\circ)$

8) $\sin\left(\frac{9\pi}{2}\right)$

9) $\tan(7\pi)$

10) $\cos\left(-\frac{11\pi}{4}\right)$

11) $\sin -225^\circ$

12) $\tan(585^\circ)$

13) $\cos(1440^\circ)$

14) $\sin\left(-\frac{13\pi}{4}\right)$

15) $\cos\left(\frac{23\pi}{6}\right)$

Directions: Simplify the following expressions and match them with their solution. Connect the number of the question with the letter of the solution. Show all work on a separate sheet of paper!

- | | |
|--|---|
| 1. $\sec^2 x - 1$ | 23. $\frac{\sin x - \cos x}{\sin x \cos x}$ |
| 2. $\frac{1}{\sin x}$ | 24. $1 - \sec^2 x$ |
| 3. $\sin x \cot x$ | 25. $1 - \csc^2 x$ |
| 4. $\frac{\sin^2 x}{1 + \cos x}$ | 26. $3(\sin^2 x + \cos^2 x)$ |
| 5. $1 + \tan^2 x$ | 27. $\cos x \tan x + \sin x \cot x$ |
| 6. $\csc^2 x - \cot^2 x$ | A. $\csc x$ |
| 7. $\frac{\cos^2 x}{1 + \sin x}$ | B. 1 |
| 8. $\frac{\sin x + \cos x}{\sin x \cos x}$ | C. $\sec x + \csc x$ |
| 9. $\frac{\cot^2 x}{\csc x - 1}$ | D. $\sin x$ |
| 10. $\frac{1}{\tan x}$ | E. $\sec x$ |
| 11. $\frac{1}{\cot x}$ | F. 2 |
| 12. $\frac{\cos x}{\cot x}$ | G. -1 |
| 13. $\cot^2 x + 1$ | H. $\cos^2 x$ |
| 14. $\frac{1}{\cos x}$ | I. 3 |
| 15. $\frac{\cot^2 x}{\csc x + 1}$ | J. $\csc x - 1$ |
| 16. $\sin^2 x + \cos^2 x + 1$ | K. $\sec x - 1$ |
| 17. $1 - (\sec^2 x - \tan^2 x)$ | L. $\cot^2 x$ |
| 18. $\csc^2 x - 1$ | M. $\sec x - \csc x$ |
| 19. $1 - \sin^2 x$ | N. $\sec x + 1$ |
| 20. $\frac{\tan^2 x}{\sec x - 1}$ | O. 0 |
| 21. $\frac{\tan^2 x}{\sec x + 1}$ | P. $\tan^2 x$ |
| 22. $-(\sin^2 x + \cos^2 x)$ | Q. $\cos x$ |
| | R. $-\cot^2 x$ |
| | S. $\sec^2 x$ |
| | T. $1 - \sin x$ |
| | U. $\csc x + 1$ |
| | V. $\tan x$ |
| | W. $1 - \cos x$ |
| | X. $-\tan^2 x$ |
| | Y. $\cot x$ |
| | Z. $\csc^2 x$ |
| | AA. $\sin x + \cos x$ |

Standard: Complete # 1, 2, 3, 5, 7, 8
 Hwms: Complete ALL!

Prove each of the following identities.

- $\tan x \sin x + \cos x = \sec x$
- $\frac{1}{\tan x} + \tan x = \frac{1}{\sin x \cos x}$
- $\sin x - \sin x \cos^2 x = \sin^3 x$
- $\frac{\cos \alpha}{1 + \sin \alpha} + \frac{1 + \sin \alpha}{\cos \alpha} = 2 \sec \alpha$
- $\frac{\cos x}{1 - \sin x} - \frac{\cos x}{1 + \sin x} = 2 \tan x$
- $\cos^2 x = \frac{\csc x \cos x}{\tan x + \cot x}$
- $\frac{\sin^4 x - \cos^4 x}{\sin^2 x - \cos^2 x} = 1$
- $\frac{\tan^2 x}{\tan^2 x + 1} = \sin^2 x$

* 9. $\frac{1 - \sin x}{\cos x} = \frac{\cos x}{1 + \sin x}$ *

Challenge Question

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(27 questions)

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(9 questions)

☐ TENMARKS: Solving Right
Triangles

(The sub has your username & passed word if needed)

*ALL due by Monday! *

Unit Circle Worksheet C

Name Ken
Period _____

The given point P is located on the Unit Circle. State the quadrant and find the angle θ , also $\sin \theta$, $\cos \theta$ and $\tan \theta$.

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

Quad: II

$\sin \theta: \frac{\sqrt{3}}{2}$

$\cos \theta: \frac{1}{2}$

$\tan \theta: \frac{\sqrt{3}}{1}$

2) $P(0, -1)$

Quad: Y Axis

$\sin \theta: -1$

$\cos \theta: 0$

$\tan \theta: \text{undefined}$

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

Quad: III

$\sin \theta: \frac{-\sqrt{2}}{2}$

$\cos \theta: \frac{-\sqrt{2}}{2}$

$\tan \theta: 1$

Find the exact value of each function.

4) $\cos\left(\frac{7\pi}{4}\right)$

$\frac{\sqrt{2}}{2}$

7) $\cos(600^\circ)$

$-\frac{1}{2}$

10) $\cos\left(\frac{-11\pi}{4}\right)$

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

13) $\cos(440^\circ)$

1

5) $\sin -30^\circ$

$-\frac{1}{2}$

8) $\sin\left(\frac{9\pi}{2}\right)$

1

11) $\sin -225^\circ$

$\frac{\sqrt{2}}{2}$

14) $\sin\left(\frac{-13\pi}{4}\right)$

$\frac{\sqrt{2}}{2}$

6) $\sin\left(\frac{2\pi}{3}\right)$

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

9) $\tan(7\pi)$

0

12) $\tan(585^\circ)$

1

15) $\cos\left(\frac{23\pi}{6}\right)$

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

Directions: Simplify the following expressions and match them with their solution. Connect the number of the question with the letter of the solution. Show all work on a separate sheet of paper!

1. $\sec^2 x - 1$ P
 2. $\frac{1}{\sin x}$ A Q
 3. $\sin x \cot x$ Q
 4. $\frac{\sin^2 x}{1 + \cos x}$ W
 5. $1 + \tan^2 x$ S B
 6. $\csc^2 x - \cot^2 x$ B
 7. $\frac{\cos^2 x}{1 + \sin x}$ T
 8. $\frac{\sin x + \cos x}{\sin x \cos x}$ C
 9. $\frac{\cot^2 x}{\csc x - 1}$ U
 10. $\frac{1}{\tan x}$ Y V
 11. $\frac{1}{\cot x}$ V
 12. $\frac{\cos x}{\cot x}$ D
 13. $\cot^2 x + 1$ Z
 14. $\frac{1}{\cos x}$ E
 15. $\frac{\cot^2 x}{\csc x + 1}$ J F
 16. $\sin^2 x + \cos^2 x + 1$ F
 17. $1 - (\sec^2 x - \tan^2 x)$ O
 18. $\csc^2 x - 1$ L
 19. $1 - \sin^2 x$ H
 20. $\frac{\tan^2 x}{\sec x - 1}$ N
 21. $\frac{\tan^2 x}{\sec x + 1}$ K
 22. $-(\sin^2 x + \cos^2 x)$ G

23. $\frac{\sin x - \cos x}{\sin x \cos x}$ M
 24. $1 - \sec^2 x$ X
 25. $1 - \csc^2 x$ R
 26. $3(\sin^2 x + \cos^2 x)$ I
 27. $\cos x \tan x + \sin x \cot x$ AA

- ~~A. $\csc^2 x$~~
~~B. 1~~
~~C. $\sec x + \csc x$~~
~~D. $\sin x$~~
~~E. $\sec x$~~
~~F. 2~~
~~G. 1~~
~~H. $\cos^2 x$~~
~~I. $\csc^2 x$~~
~~J. $\sec x - 1$~~
~~K. $\sec x - 1$~~
~~L. $\cot^2 x$~~
~~M. $\sec x - \sec x$~~
~~N. $\sec x + 1$~~
~~O. 0~~
~~P. $\tan^2 x$~~
~~Q. $\cos x$~~
~~R. $\cot^2 x$~~
~~S. $\sec^2 x$~~
~~T. $1 - \sin x$~~
~~U. $\csc^2 x + 1$~~
~~V. $\tan^2 x$~~
~~W. $1 - \cos x$~~
~~X. $\tan^2 x$~~
~~Y. $\cot^2 x$~~
~~Z. $\sec^2 x$~~
~~AA. $\sin x + \cos x$~~

Prove each of the following identities.

1. $\tan x \sin x + \cos x = \sec x$
 2. $\frac{1}{\tan x} + \tan x = \frac{1}{\sin x \cos x}$
 3. $\sin x - \sin x \cos^2 x = \sin^3 x$

4. $\frac{\cos \alpha}{1 + \sin \alpha} + \frac{1 + \sin \alpha}{\cos \alpha} = 2 \sec \alpha$

5. $\frac{\cos x}{1 - \sin x} - \frac{\cos x}{1 + \sin x} = 2 \tan x$

6. $\cos^2 x = \frac{\csc x \cos x}{\tan x + \cot x}$

7. $\frac{\sin^4 x - \cos^4 x}{\sin^2 x - \cos^2 x} = 1$

8. $\frac{\tan^2 x}{\tan^2 x + 1} = \sin^2 x$

* 9. $\frac{1 - \sin x}{\cos x} = \frac{\cos x}{1 + \sin x}$

Standard: complete # 1, 2, 3, 5, 7, 8
 Hones: complete ALL!

① $\left(\frac{\sin x}{\cos x}\right) \sin x + \cos x$

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

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

③ $\sin x - \sin x \cos^2 x$

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

$= \sin x (\sin^2 x) = \sin^3 x$

⑤ $\frac{\cos x}{1 - \sin x} - \frac{\cos x (1 - \sin x)}{1 + \sin x}$

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

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

$\frac{\cos^2 x}{\cos x}$

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

⑦ $\frac{\sin^4 x - \cos^4 x}{\sin^2 x - \cos^2 x} = (\sin^2 x + \cos^2 x) (\sin^2 x - \cos^2 x)$

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

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