Honors Algebra II
Trig. Fingers

Name KEY
Date _____ Period _____

Find the exact trigonometric value. If necessary, simplify and rationalize any radicals. No decimals.

ϑ	$\sin\vartheta$	$\cos\vartheta$	$\tan\vartheta$	$\csc\vartheta$	$\sec\vartheta$	$\cot\vartheta$
0°						
30°						
45°						
60°						
90°						

1. $\sin 120°$ — $\frac{1}{2}$

2. $\cos 210°$ — $-\frac{\sqrt{3}}{2}$

3. $\tan 315°$ — -1

4. $\cot 180°$ — UNDEFINED

5. SIN $\csc 150°$ — $\theta' = 30°$ — 2

6. COS $\sec 300°$ — $\theta' = 60°$ — 2

7. $\sin 180°$ — 0

8. COS $\sec 135°$ — $\theta' = 45$ — $-\sqrt{2}$

9. $\cos 225°$ — $\theta' = 45°$ — $-\frac{\sqrt{2}}{2}$

10. $\sin 330°$ — $\theta' = 30$ — $-\frac{1}{2}$

11. SIN $\csc 300°$ — $\theta' = 60$ — $-\frac{2\sqrt{3}}{3}$

12. $\cot 135°$ — $\theta' = 45°$ — -1

Find the exact trigonometric value. If necessary, simplify and rationalize any radicals. No decimals.

13. $\sin 135°$

$\theta' = 45°$

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

14. $\cos 360°$

1

15. $\tan 30°$

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

16. $\cot 120°$ TAN

$\theta' = 60$

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

17. $\csc 150°$ SIN

$\theta' = 30°$

2

18. $\sec 240°$ COS

$\theta' = 60$

-2

19. $\sin 0°$

0

20. $\cos 225°$

$\theta' = 45$

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

21. $\tan 300°$

$\theta' = 60$

$-\sqrt{3}$

22. $\cos 240°$

$\theta' = 60$

$-\frac{1}{2}$

23. $\csc 210°$ SIN

$\theta' = 30$

-2

24. $\sec 135°$ COS

$\theta' = 45$

$-\sqrt{2}$

25. $\sin 750°$

$750 - 360 = 390 - 360 = 30$

SIN 30°

$\frac{1}{2}$

26. $\cos(-675°)$

$-675 + 360 = -315 + 360 = 45$

COS 45°

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

27. $\tan 720°$

$720 - 360 = 360$

TAN 360

0

Finding Angle Measures Given Trigonometric Function Values

Step 1: Find the quadrants of the trigonometric function by its charge.

Step 2: Find the reference angle by the function value.

Step 3: Use the reference angle to find the angle measure, ϑ, in the interval $(0°, 360°)$.

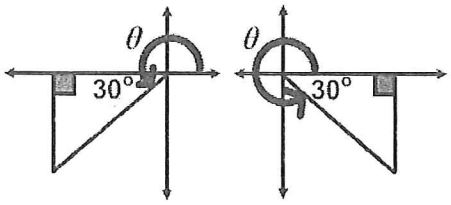
Examples

28. $\sin\vartheta = -\frac{1}{2}$

Step 1
Since sine is negative, ϑ is in quadrant III and IV.

Step 2
Using my trig. fingers, I know that sine is equal to 1/2 when sine is at 30°. Therefore, me reference angle is 30°.

Step 3
Since I'm restricted to quadrants III and IV from step 1, I'm going to use the reference angle of 30° to find the angle measures.



$\vartheta = 180° + 30$ and $\vartheta = 360° - 30°$
$\vartheta = 210°$ $\vartheta = 330°$

29. $\cos\vartheta = \frac{\sqrt{3}}{2}$

$\theta' = 30°$

I IV

30° 330°

30. $\tan\vartheta = -1$

$\theta' = 45$

TAN IS NEGATIVE

II IV

135° 315°

31. $\sin\vartheta = -\frac{\sqrt{3}}{2}$

$\theta' = 60°$

III IV

240° 300°

32. $\tan\vartheta = \sqrt{3}$

$\theta' = 60$

I III

60° 240°

33. $\sec\vartheta = 2$ (cos)

$\theta' = 60$

I IV

60° 300°