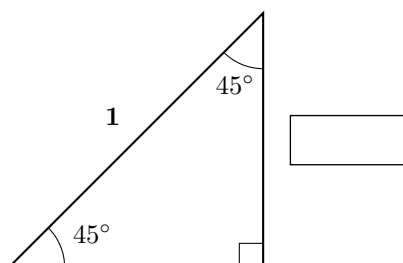


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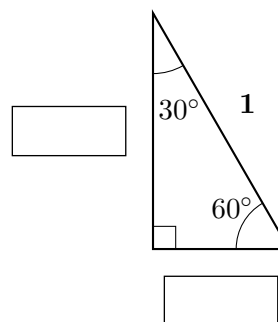
Date: _____

Section 1 : Special Right Triangles

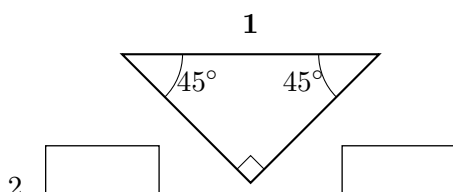
Each right triangle below has a hypotenuse equal to 1. Write the length of each leg in each label box.



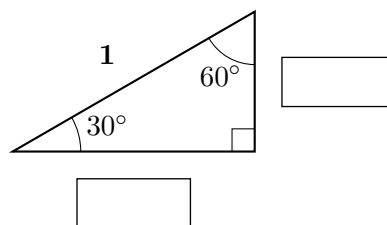
1.



3.



2.



4.

Section 2 : Basic Trigonometric Evaluations

Find the exact radical value of each trigonometric expression. Rationalize denominators where necessary.

1. $\sin\left(\frac{\pi}{3}\right) =$ _____

5. $\sin(210^\circ) =$ _____

9. $\cot(330^\circ) =$ _____

2. $\cos(45^\circ) =$ _____

6. $\tan\left(\frac{3\pi}{4}\right) =$ _____

10. $\sin(\pi) =$ _____

3. $\tan\left(\frac{\pi}{6}\right) =$ _____

7. $\sec(60^\circ) =$ _____

11. $\cos\left(\frac{3\pi}{2}\right) =$ _____

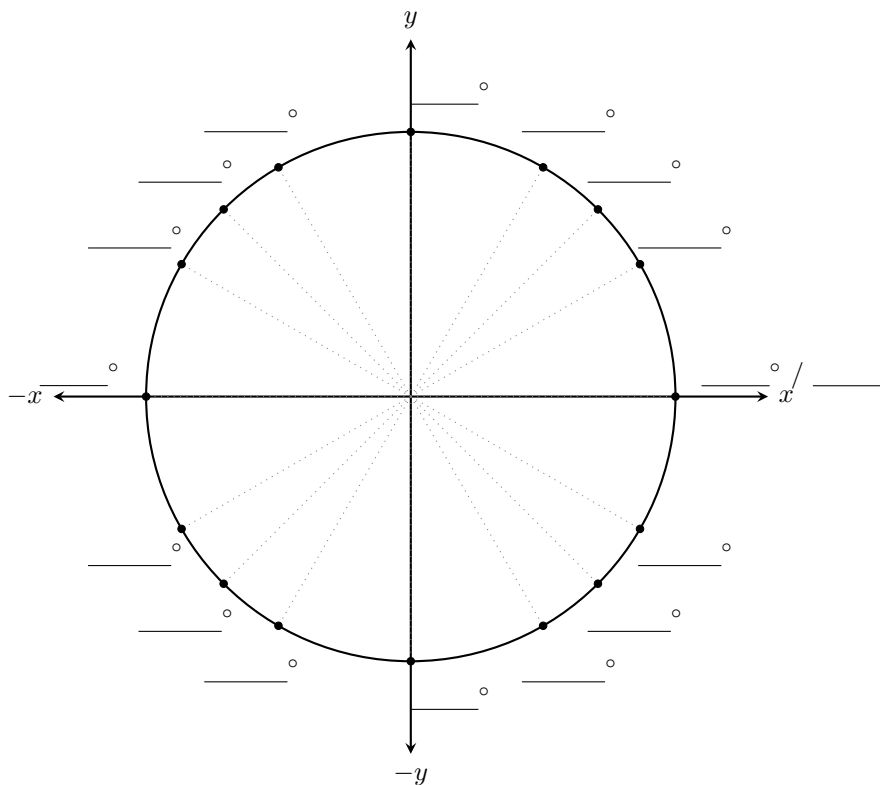
4. $\cos\left(\frac{2\pi}{3}\right) =$ _____

8. $\csc\left(\frac{5\pi}{4}\right) =$ _____

12. $\tan(180^\circ) =$ _____

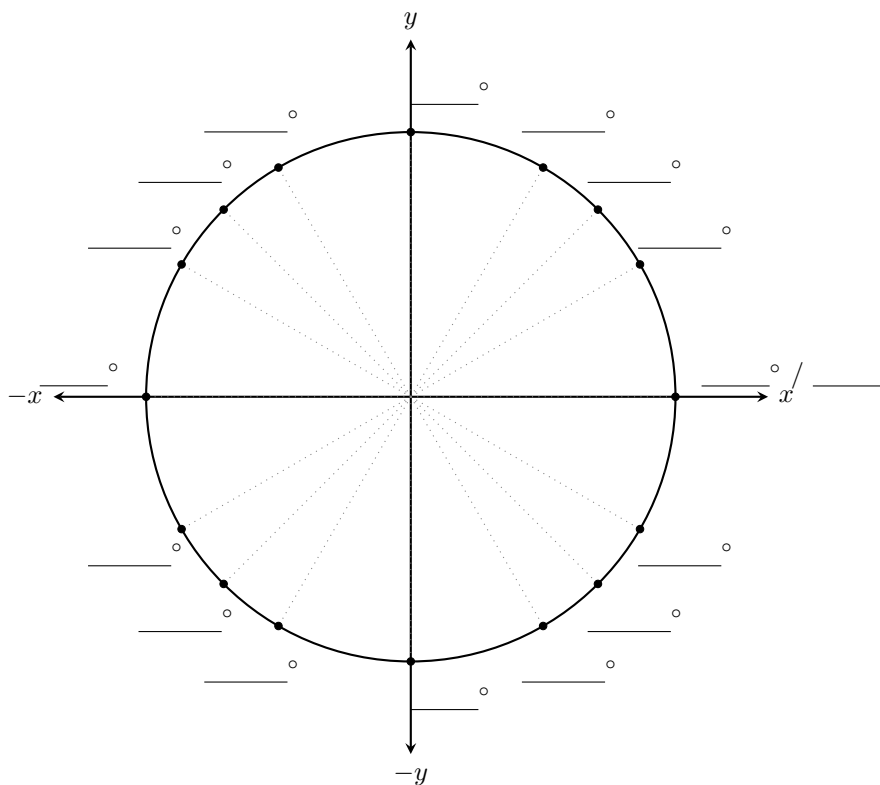
Section 3 : The Degree Circle

Label all 16 standard positions along the unit circle with their **degree values**.



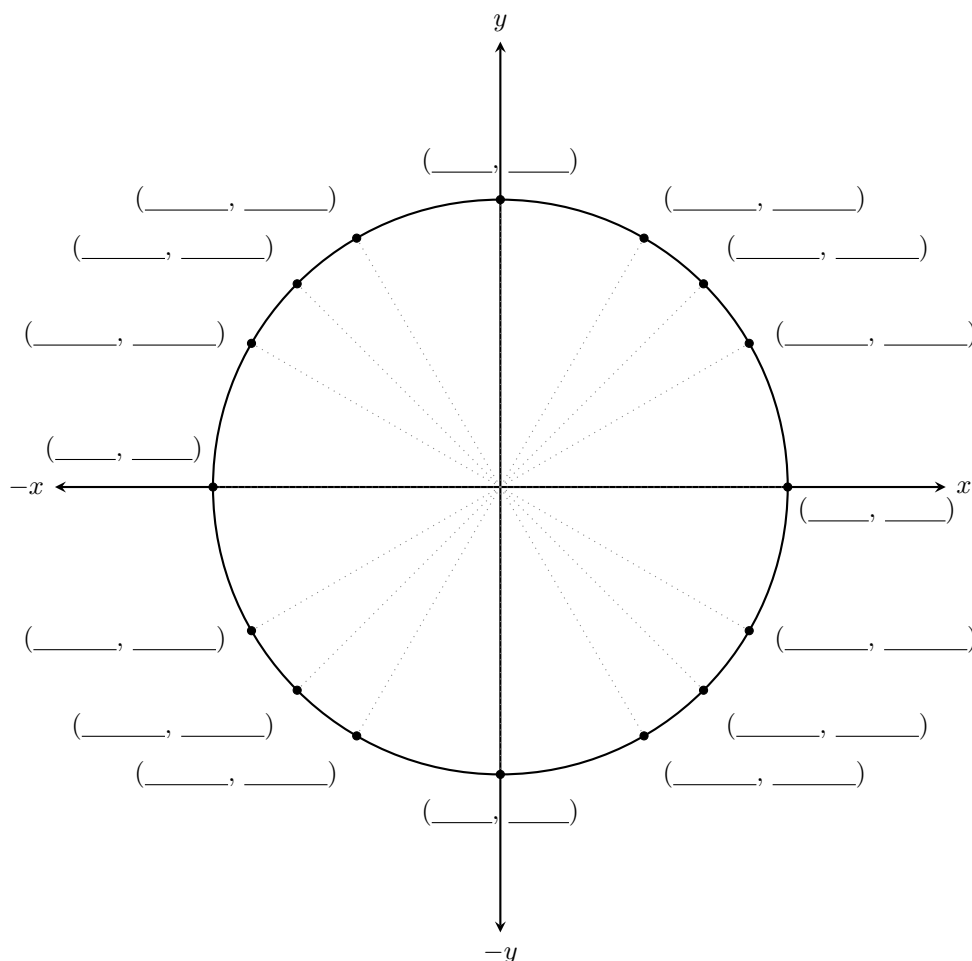
Section 4 : The Radian Circle

Label all 16 standard positions along the unit circle with their **radian values** in terms of π .



Section 5 : The Coordinate Circle

Label all 16 standard positions with their exact unit circle coordinates, $(x, y) = (\cos \theta, \sin \theta)$.



Section 6 : Trigonometric Identities & Equivalences

Rewrite or simplify each expression using fundamental quotient, reciprocal, and Pythagorean identities.

6. Rewrite $\cot \theta$ as a quotient of sine and cosine.

10. Simplify completely:
 $\cos \theta \cdot \tan \theta \cdot \csc \theta$

7. Rewrite $\sec \theta$ in terms of cosine.

11. Simplify completely:
 $\frac{\sin \theta \cdot \sec \theta}{\tan \theta}$

8. Rewrite $\csc \theta$ in terms of sine.

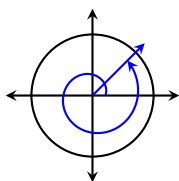
9. Rewrite $\tan \theta$ using only secant and cosecant.

12. Simplify completely:
 $\tan \theta \cdot \csc \theta \cdot \cos \theta$

Section 7: Angle Sketching (Rotations and Direction)

For each item, sketch a directional spiral arrow showing the total rotation starting from the positive x -axis, draw the terminal ray, and identify the reference angle θ' .

Example $\theta = 405^\circ$

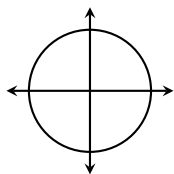


Direction of rotation: Counter-clockwise (1 turn $+45^\circ$)

Terminal Quadrant / Axis: Quadrant I

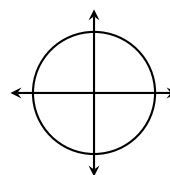
Acute Reference Angle θ' : 45°

1. $\theta = 495^\circ$



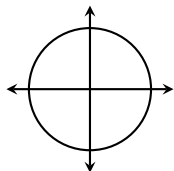
Direction: _____
Quadrant: _____
Reference Angle θ' : _____

4. $\theta = -\frac{3\pi}{4}$



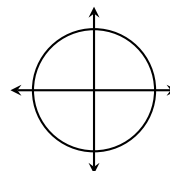
Degrees: _____
Quadrant: _____
Reference Angle θ' : _____

2. $\theta = -210^\circ$



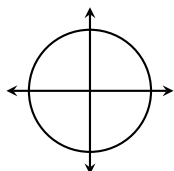
Direction: _____
Quadrant: _____
Reference Angle θ' : _____

5. $\theta = -450^\circ$



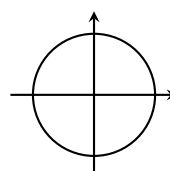
Coterminal $[0, 360^\circ)$: _____
Terminal Axis: _____
Reference Angle θ' : _____

3. $\theta = \frac{11\pi}{3}$



Degrees: _____
Quadrant: _____
Reference Angle θ' : _____

6. $\theta = -\frac{13\pi}{6}$



Degrees: _____
Quadrant: _____
Reference Angle θ' : _____

Section 8 : Evaluation and Inverse Reconstruction

Part A: Evaluating Trigonometric Functions

Evaluate each expression to its exact radical value. Rationalize denominators where necessary.

13. $\tan(-135^\circ) =$

17. $\sin\left(\frac{7\pi}{4}\right) =$

14. $\sec\left(\frac{5\pi}{3}\right) =$

18. $\cos(-300^\circ) =$

15. $\csc\left(-\frac{7\pi}{6}\right) =$

19. $\cot\left(-\frac{2\pi}{3}\right) =$

16. $\cot(420^\circ) =$

20. $\sec(540^\circ) =$

Part B: Finding Unique Angles from Verbal Descriptions

Find the single, unique angle θ on the domain $0 \leq \theta < 2\pi$ satisfying each verbal description. Express all answers in **radians**.

21. Identify the angle in the second quadrant whose sine equals one-half.

$\theta =$ _____

22. Identify the angle whose tangent is negative one and whose sine is positive.

$\theta =$ _____

23. Identify the angle in the fourth quadrant whose cosine equals positive square root of three over two.

$\theta =$ _____

24. Identify the angle located in the third quadrant whose secant equals negative two.

$\theta =$ _____

25. Identify the quadrantal angle whose cosine is zero and whose cosecant is negative one.

$\theta =$ _____

26. Identify the angle in the third quadrant whose cotangent equals the square root of three.

$\theta =$ _____

27. Identify the angle whose cosecant is positive square root of two and whose cosine is negative.

$\theta =$ _____

28. Identify the angle located along an axis whose sine is zero and whose secant is negative one.

$\theta =$ _____