

Name: _____

Date: _____

QUICK REFERENCE

$(x, y) = (\cos \theta, \sin \theta)$

$\tan \theta = \sin \theta / \cos \theta$

$180^\circ = \pi \text{ radians}$

LEVEL 1 · ANGLES AND CONVERSIONS

1

DEGREES TO RADIANS

Convert to radians.

135°

2

RADIANS TO DEGREES

Convert to degrees.

$5\pi/6$

3

COTERMINAL ANGLES

Find one positive coterminal angle.

$-\pi/3$

4

UNIT-CIRCLE COORDINATES

Find the corresponding point.

$\theta = 5\pi/6$

LEVEL 2 · EXACT VALUES

5

SINE, COSINE, AND TANGENT

Find the exact values at $\theta = 7\pi/4$.

$\sin \theta =$ _____

$\cos \theta =$ _____

$\tan \theta =$ _____

Quadrant: _____

Work: _____

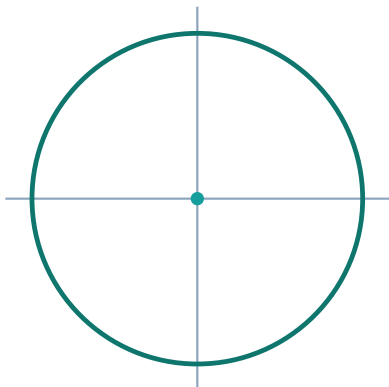
Name: _____

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LEVEL 2 • COORDINATES

6

POINT TO ANGLE AND VALUES

For $P = (-1/2, -\sqrt{3}/2)$, find θ in $[0, 2\pi)$ and the exact trig values. $\theta =$ _____ $\sin \theta =$ _____ $\cos \theta =$ _____ $\tan \theta =$ _____

LEVEL 3 • APPLY THE CIRCLE

7

QUADRANT AND REFERENCE ANGLE

Identify both for the given angle.

$11\pi/6$

8

MIXED EXACT VALUES

Evaluate each expression exactly.

$\cos 225^\circ \cdot \sin 120^\circ \cdot \tan 150^\circ$

9

UNDEFINED VALUES

Evaluate and explain your result.

$\tan(3\pi/2)$

CHECK BEFORE YOU FINISH

- ☐ Use the correct reference angle.
- ☐ Apply the quadrant signs.
- ☐ Simplify radicals and fractions.
- ☐ Mark undefined values clearly.

Use the work shown to check the angle, quadrant, signs, and exact values.

1

Degrees to radians

$$135^\circ \times \pi/180^\circ = 135\pi/180$$

Answer: $3\pi/4$

2

Radians to degrees

$$(5\pi/6) \times 180^\circ/\pi = 150^\circ$$

Answer: 150°

3

Positive coterminal angle

$$-\pi/3 + 2\pi = -\pi/3 + 6\pi/3$$

Answer: $5\pi/3$

4

Coordinates at $5\pi/6$ Reference angle $\pi/6$; Quadrant II has $(-, +)$.**Answer: $(-\sqrt{3}/2, 1/2)$**

5

Exact values at $7\pi/4$ Reference angle $\pi/4$; Quadrant IV has $(+, -)$.**Answer: $\sin = -\sqrt{2}/2, \cos = \sqrt{2}/2, \tan = -1$**

6

Point to angle and values

Both coordinates are negative, so the point is in Quadrant III.

Answer: $\theta = 4\pi/3; \sin = -\sqrt{3}/2, \cos = -1/2, \tan = \sqrt{3}$

7

Quadrant and reference angle $11\pi/6$ lies between $3\pi/2$ and 2π .**Answer: Quadrant IV; reference angle $\pi/6$**

8

Mixed exact valuesUse reference angles 45° , 60° , and 30° with quadrant signs.**Answer: $-\sqrt{2}/2, \sqrt{3}/2, -\sqrt{3}/3$**

9

Undefined tangent $\tan \theta = \sin \theta / \cos \theta$ and $\cos(3\pi/2) = 0$.**Answer: Undefined**