What Is a Radian? Build It, Don't Memorize It

Review: Radian definition, arc length, and the unit circle

Name: _____ **Date:** _____

Part 1: Explain in Your Own Words

From class today, answer without looking at your notes first. Then check.

A. A radian is defined as the angle where the arc length equals _____.
B. There are _____ radians in a full circle.
C. The conversion formula from degrees to radians is: θ(rad) = _____

Part 2: Use the Formula

Convert. Show your work.

A. 120° = _____ rad
B. 3π/4 rad = _____ degrees
C. 270° = _____ rad
D. π/6 rad = _____ degrees

Part 3: Arc Length Practice

Use $s = r\theta$ (remember: θ must be in radians).

A. Arm length = 6 cm, angle = $\pi/2$. How far does the tip travel?
B. Arm length = 10 cm, angle = 120°. Convert first, then find arc length.
C. Arc length = 18 cm, arm length = 12 cm. What is the angle in radians? In degrees?

Part 4: Sketch the Unit Circle

Draw a circle. Mark these angles and write the radian equivalent next to each:
0° / 90° / 180° / 270° / 360°

At each angle, write the $(\cos\theta, \sin\theta)$ coordinate.

Part 5: Need-to-Know

One question from today you still want answered: