## Unit 6 Lesson 5: The Pythagorean Identity (Part 1)

### 1 Circle Equations (Warm up)

#### Student Task Statement

Here is a circle centered at $\left(0,0\right)$ with a radius of 1 unit.

What are the exact coordinates of $P$ if $P$ is rotated counterclockwise $\frac{π}{3}$ radians from the point $\left(1,0\right)$? Explain or show your reasoning.



### 2 Cosine, Sine, and the Unit Circle

#### Student Task Statement

What are the exact coordinates of point $Q$ if it is rotated $\frac{2π}{3}$ radians counterclockwise from the point $\left(1,0\right)$? Explain or show your reasoning.



### 3 A New Identity

#### Student Task Statement

1. Is the point $\left(-0.5,sin\left(\frac{4π}{3}\right)\right)$ on the unit circle? Explain or show your reasoning.
2. Is the point $\left(-0.5,sin\left(\frac{5π}{6}\right)\right)$ on the unit circle? Explain or show your reasoning.
3. Suppose that $sin\left(θ\right)=-0.5$ and that $θ$ is in quadrant 4. What is the exact value of $cos\left(θ\right)$? Explain or show your reasoning.

#### Images for Activity Synthesis





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