# Quiz 11.1 (Unit Circle Permitted)

**Sketch the angle in standard position. Use the Unit Circle to find the exact values for the given trigonometric functions.**

❌1. $\sin(120°) = \dfrac{\sqrt{3}}{2}$

2. $\cos(-450°) = 0$

3. $\tan(390°)$

$\dfrac{y}{x} = \dfrac{\frac{1}{2} \cdot 2}{\frac{\sqrt{3}}{2} \cdot 2} = \dfrac{1}{\sqrt{3}} \approx \dfrac{\sqrt{3}}{\sqrt{3}}$

$\dfrac{\sqrt{3}}{3}$
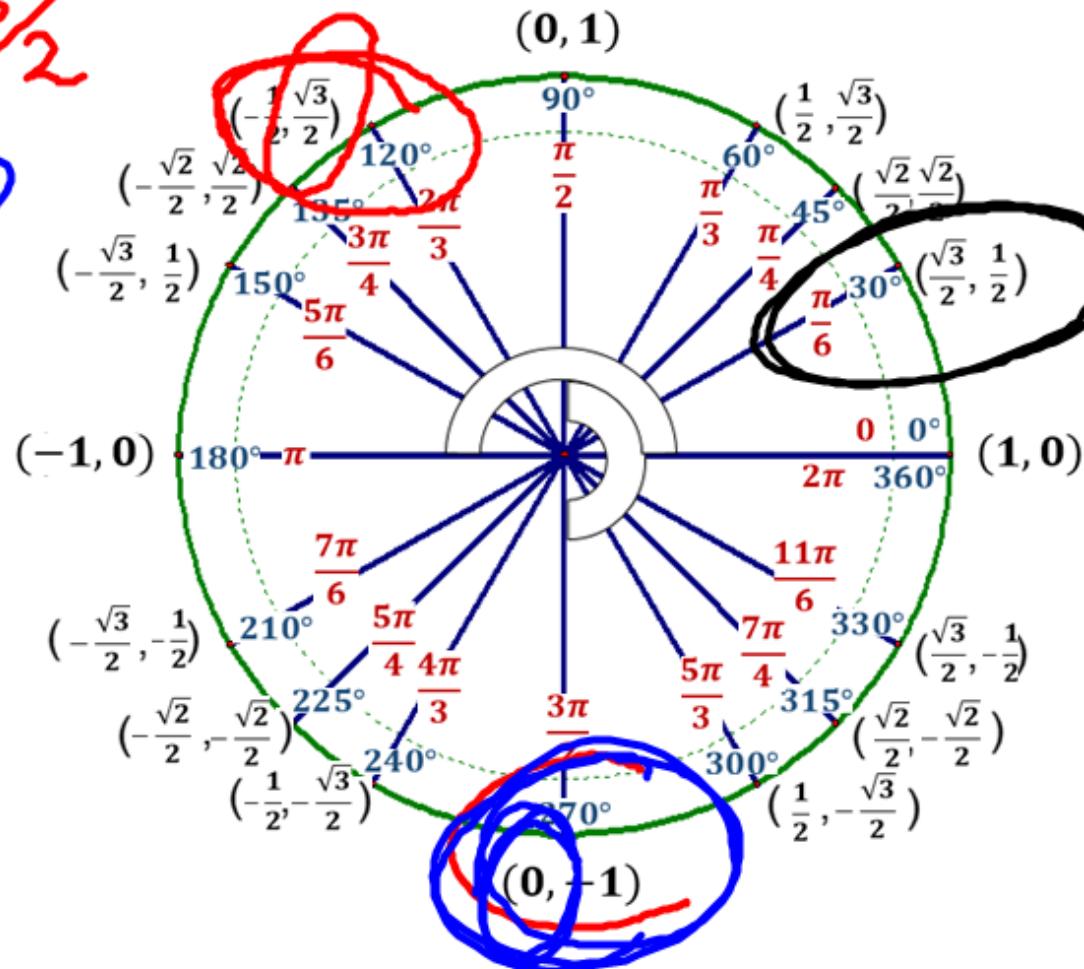
# Lesson 11.2: Radians and the Unit Circle

**Units of Measure:**
    360 <u>Degrees</u> in full circle.
    ___ <u>Radians</u> in a full circle.

<u>Radian</u>: the angle when a radius is wrapped around a circle.

1 radius

D

A

1 radius

1 radius

180°

E

.1415 radius

F

B

C

length = r

1 Radian

r
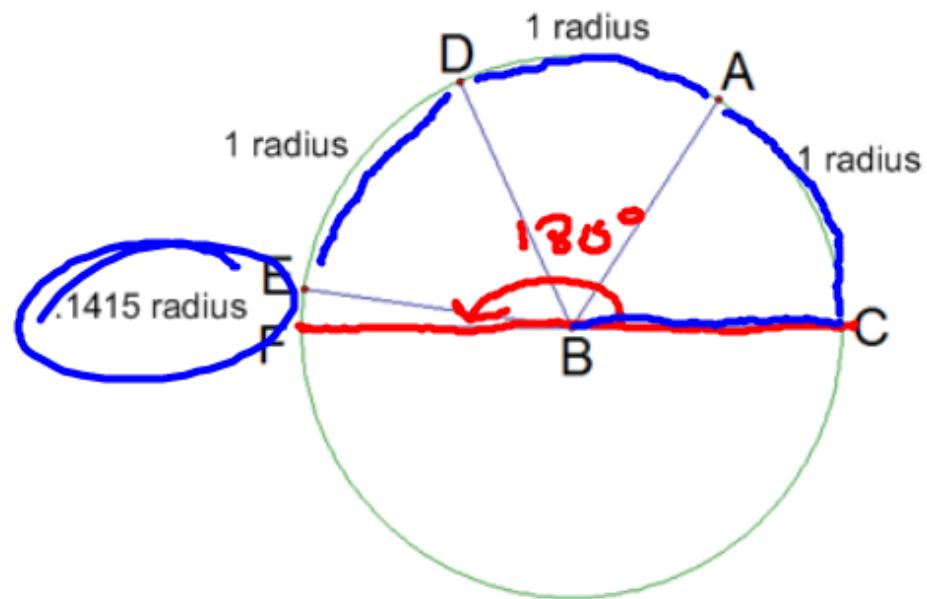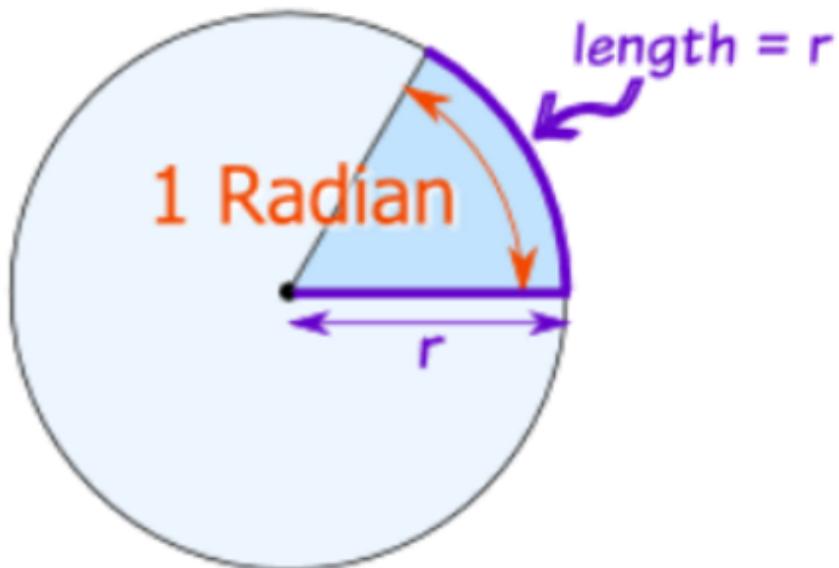
$\pi$ is equivalent to 180°

**Converting from Degrees to Radians**          Multiply by $\frac{\pi}{180}$

* $\dfrac{110° \cdot \pi}{1 \rightarrow 180°}$

$\dfrac{110\pi}{180} = \boxed{\dfrac{11\pi}{18}}$

* $\dfrac{-405°}{1} \cdot \dfrac{\pi}{180} = -\dfrac{405\pi}{180} = -\dfrac{81\pi}{36} = \boxed{-\dfrac{9\pi}{4}}$

**Converting from Radians to Degrees** Multiply by $\frac{180°}{\pi}$

* $\frac{19\pi}{12} \cdot \frac{180}{\pi} = \frac{3420}{12} = \boxed{285°}$

* $-\frac{5\pi}{18} \cdot \frac{180}{\pi} = \frac{-900}{18} = \boxed{-50°}$

*

$$\frac{9}{6} = \frac{3}{2}$$

$$\frac{30°\pi}{180°} = \frac{1\pi}{6}$$
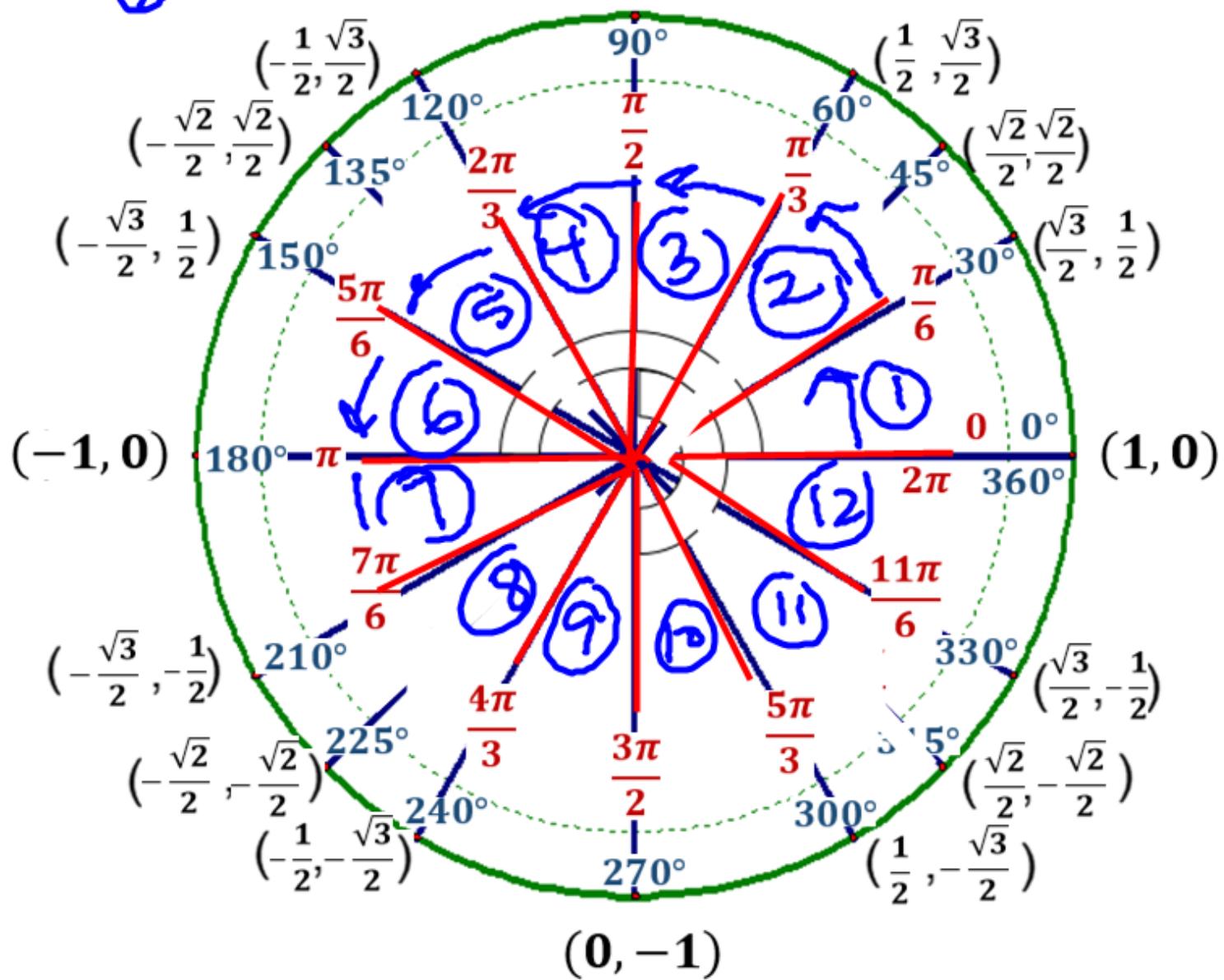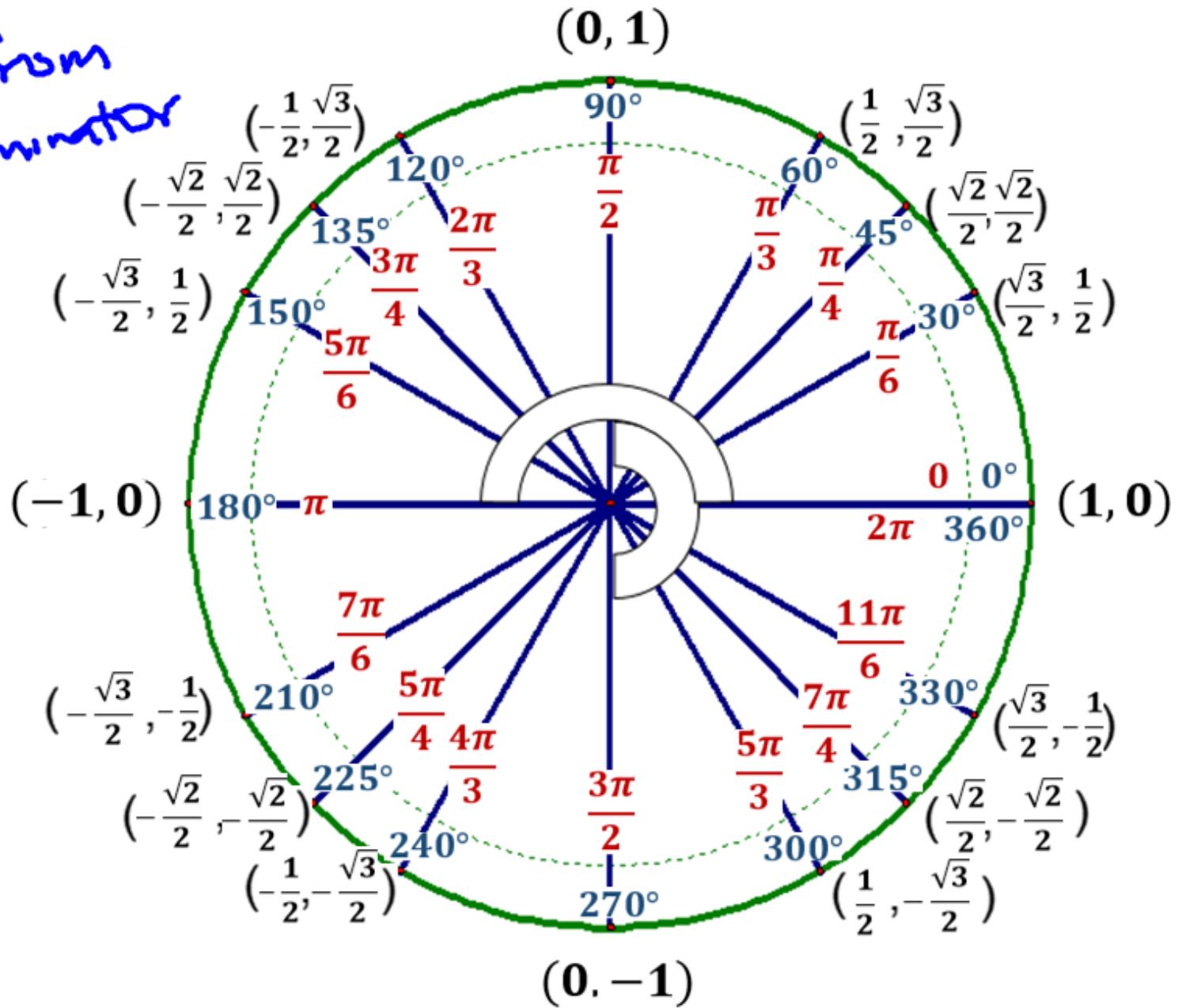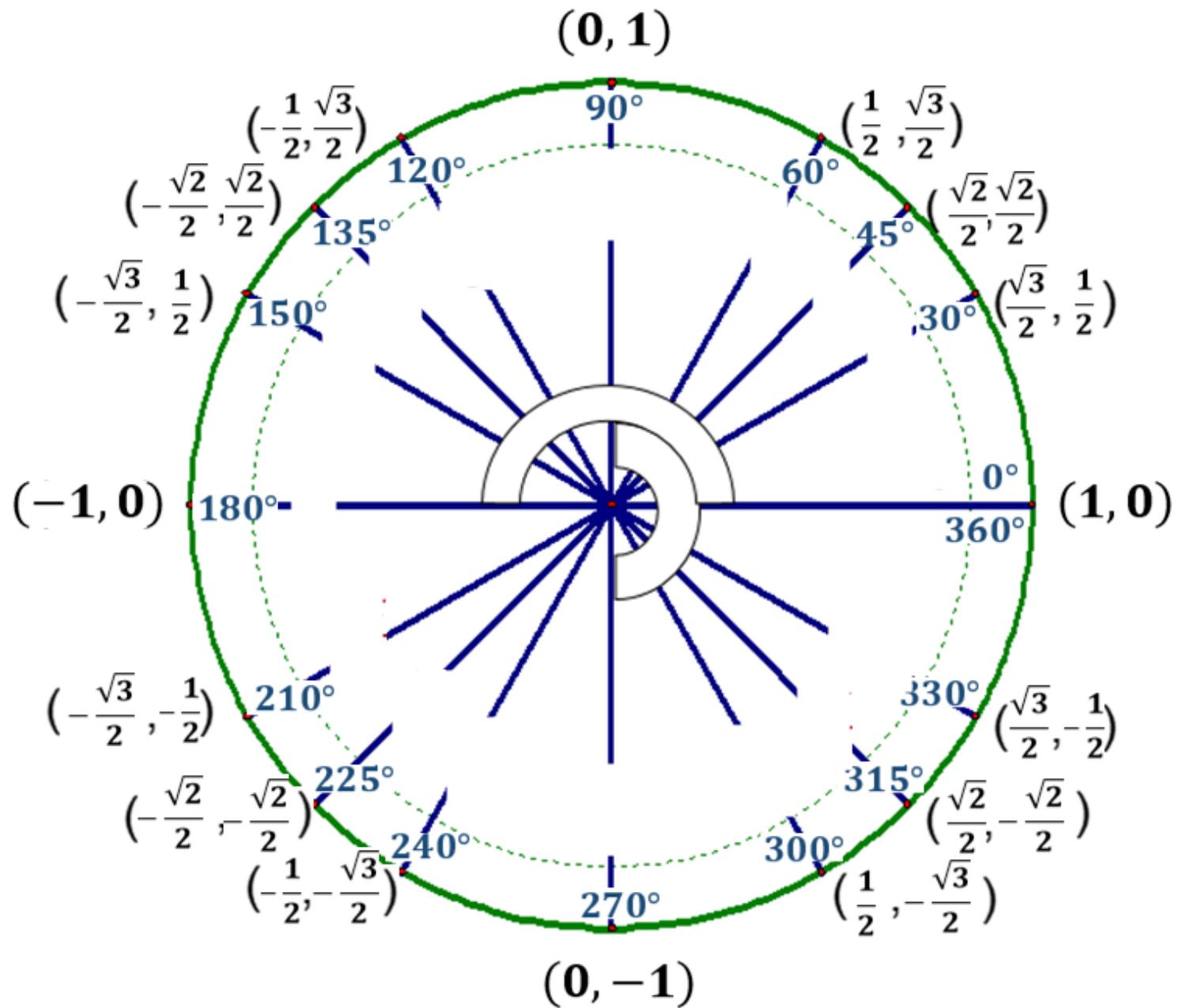
$(0, 1)$

$90°$

$\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$   $120°$   $\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$   $60°$

$\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$   $135°$   $\frac{2\pi}{3}$   $\frac{\pi}{2}$   $\frac{\pi}{3}$   $45°$   $\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

$\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$   $150°$   $\frac{5\pi}{6}$   $\frac{\pi}{6}$   $30°$   $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$(-1, 0)$   $180°$   $\pi$   $0$   $0°$   $(1, 0)$

$2\pi$   $360°$

$\frac{7\pi}{6}$   $\frac{11\pi}{6}$

$\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$   $210°$   $330°$   $\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

$225°$   $\frac{4\pi}{3}$   $\frac{3\pi}{2}$   $\frac{5\pi}{3}$   $315°$

$\left(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$   $240°$   $300°$   $\left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$

$\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$   $270°$   $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

$(0, -1)$

−1 from denominator

$(0, 1)$

$90°$

$(-\frac{1}{2}, \frac{\sqrt{3}}{2})$   $120°$   $(\frac{1}{2}, \frac{\sqrt{3}}{2})$   $60°$

$\frac{\pi}{2}$

$(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$   $135°$   $\frac{2\pi}{3}$   $\frac{\pi}{3}$   $(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$   $45°$

$\frac{3\pi}{4}$   $\frac{\pi}{4}$

$(-\frac{\sqrt{3}}{2}, \frac{1}{2})$   $150°$   $\frac{5\pi}{6}$   $\frac{\pi}{6}$   $30°$   $(\frac{\sqrt{3}}{2}, \frac{1}{2})$

$(-1, 0)$   $180°$   $\pi$   $0$   $0°$   $(1, 0)$

$2\pi$   $360°$

$\frac{7\pi}{6}$   $\frac{11\pi}{6}$

$(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$   $210°$   $\frac{5\pi}{4}$   $\frac{4\pi}{3}$   $\frac{5\pi}{3}$   $\frac{7\pi}{4}$   $330°$   $(\frac{\sqrt{3}}{2}, -\frac{1}{2})$

$225°$   $315°$

$(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$   $240°$   $\frac{3\pi}{2}$   $300°$   $(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$

$(-\frac{1}{2}, -\frac{\sqrt{3}}{2})$   $270°$   $(\frac{1}{2}, -\frac{\sqrt{3}}{2})$

$(0, -1)$

**Sketch the angle in standard position. Use the Unit Circle to find the exact values for the given trigonometric functions.**

$$\sin\frac{5\pi}{6} = y = \boxed{\frac{1}{2}}$$

$(150°)$
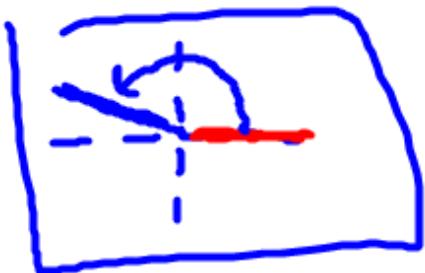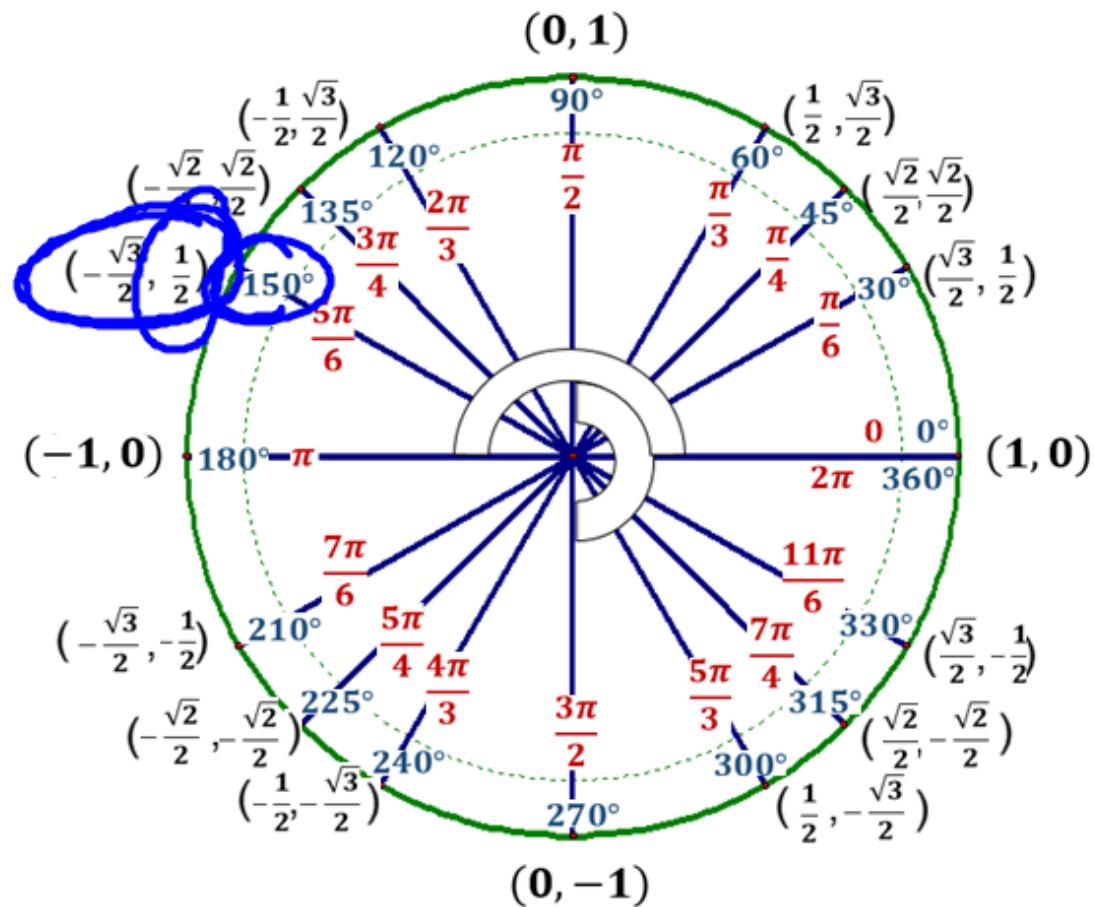


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**Sketch the angle in standard position. Use the Unit Circle to find the exact values for the given trigonometric functions.**

$$\cos\left(-\frac{3\pi}{4}\right) = x = \boxed{-\frac{\sqrt{2}}{2}}$$

$$-\frac{3\pi}{4} \cdot \frac{180}{\pi} = -135°$$

$$\frac{+360}{225°}$$
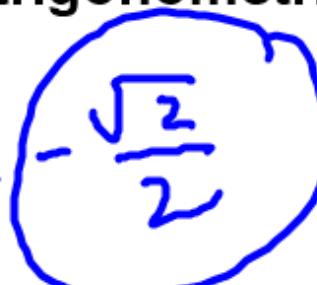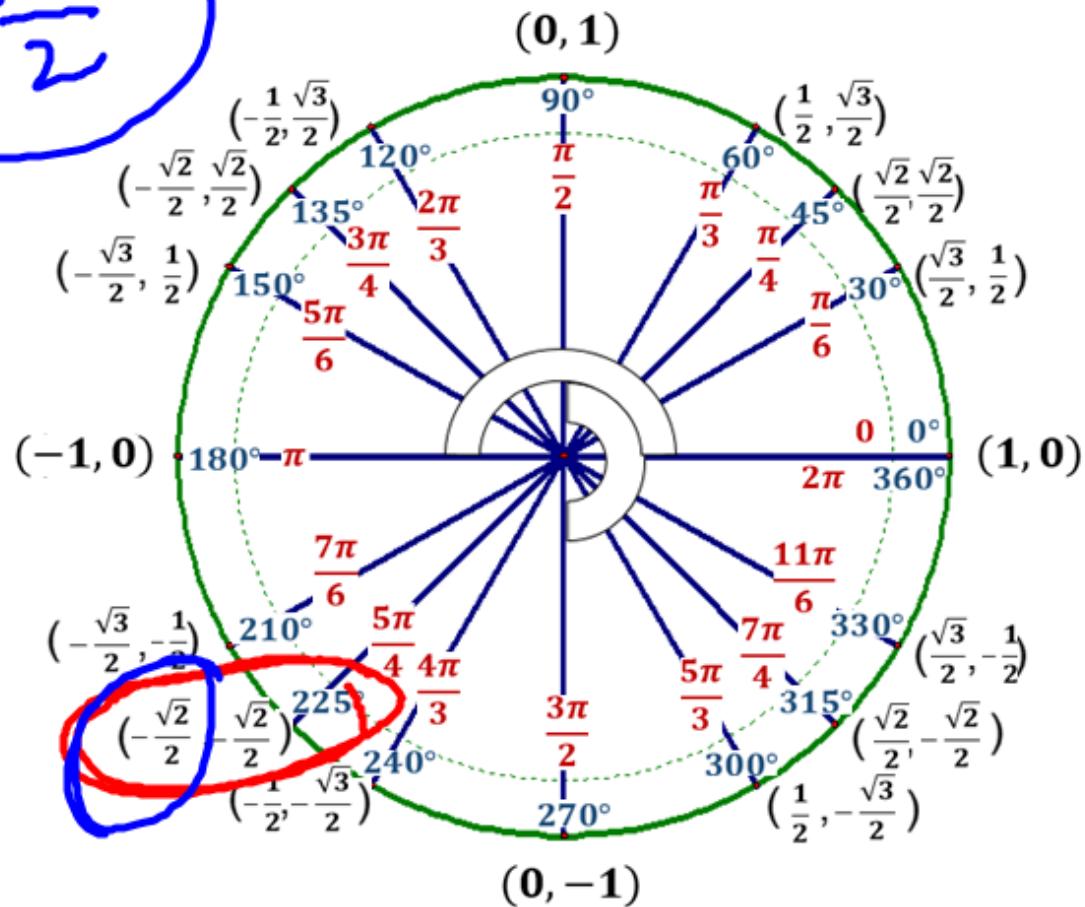
$$\cos\left(-\frac{3\pi}{4}\right)$$

$$-\frac{3\pi}{4} + 2\pi = \frac{5\pi}{4}$$
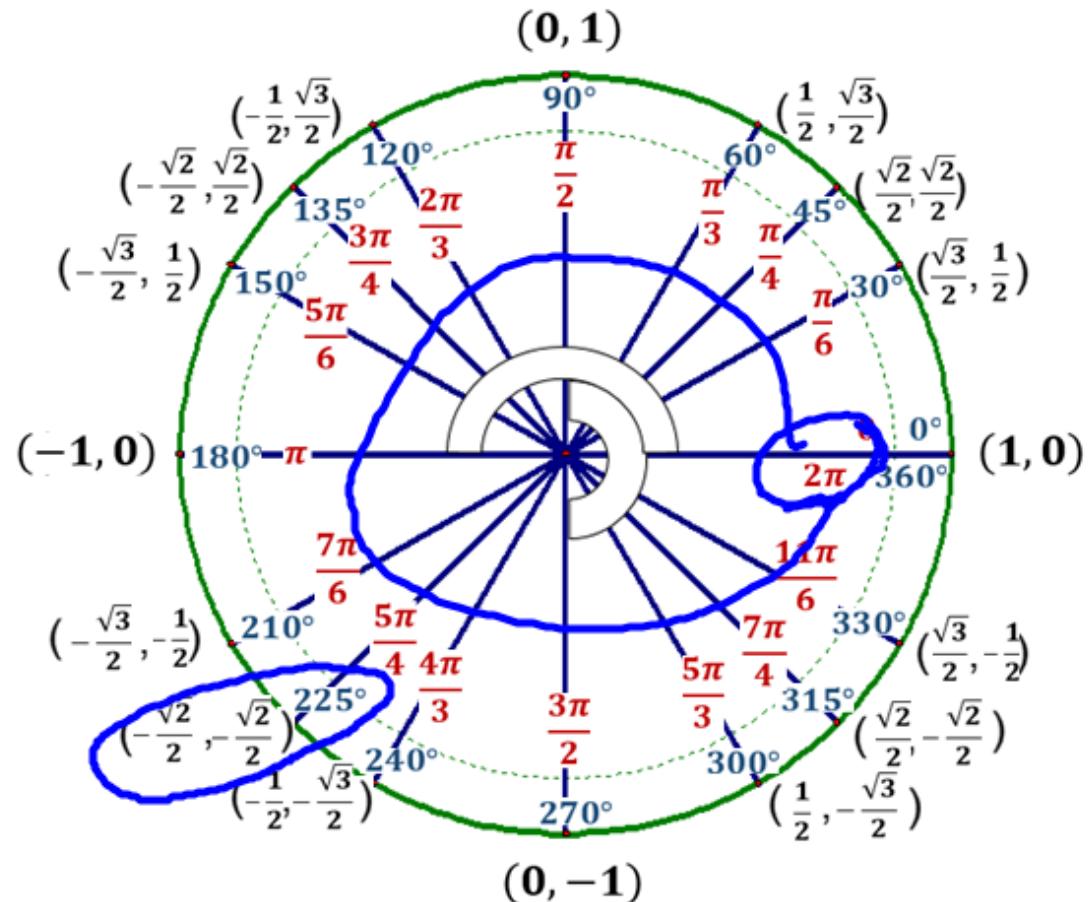
**Sketch the angle in standard position. Use the Unit Circle to find the exact values for the given trigonometric functions.**

$*$ $\cos\left(\dfrac{17\pi}{6}\right) = x = -\dfrac{\sqrt{3}}{2}$

$\dfrac{17\pi}{6} - 2\pi = \dfrac{5\pi}{6}$