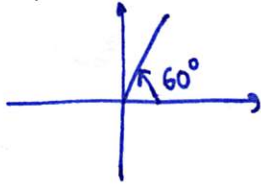


QUIZ 4.1 - 4.2

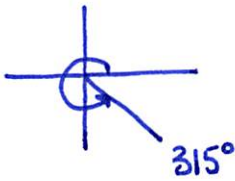
1. Sketch each angle in standard position, and convert each of them in radians (exact values).

a) 60°



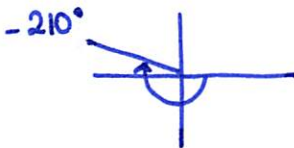
$$\theta = \frac{\pi}{3}$$

b) 315°



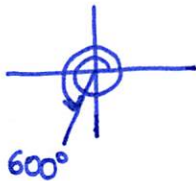
$$\theta = \frac{7\pi}{4}$$

c) -210°



$$\theta = -\frac{7\pi}{6}$$

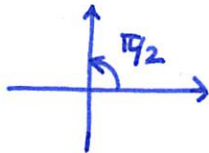
d) 600°



$$\theta = \frac{10\pi}{3}$$

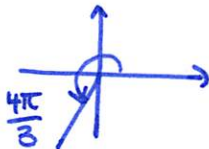
2. Sketch each angle in standard position, and convert each of them in degrees (exact values).

a) $\frac{\pi}{2}$



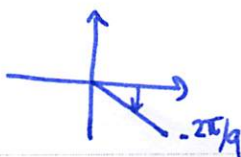
$$\theta = 90^\circ$$

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



$$\theta = 240^\circ$$

c) $-\frac{2\pi}{9}$



$$\frac{\pi}{180^\circ} \mid \theta$$

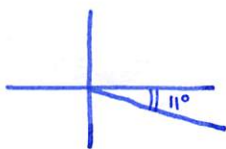
$$\frac{-2\pi/9}{\theta}$$

$$\theta = -\frac{2\pi}{9} \times \frac{180^\circ}{\pi}$$

$$\theta = -40^\circ$$

3. Determine two coterminal angles for each of the following angles. Choose one positive and one negative angle.

a) 349°

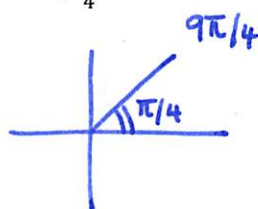


$$\theta = -11^\circ$$

$$\theta = 709^\circ$$

$$\theta_R = 11^\circ \quad (0.5)$$

b) $\frac{9\pi}{4}$



$$\theta = \frac{\pi}{4}$$

$$\theta = -\frac{7\pi}{4}$$

$$\theta_R = \frac{\pi}{4} \quad (0.5)$$

4. Determine, to the nearest hundredth, the arc length corresponding to a 195° central angle on a circle with radius 15mm.

$$\frac{\pi}{180^\circ} \times 195^\circ$$

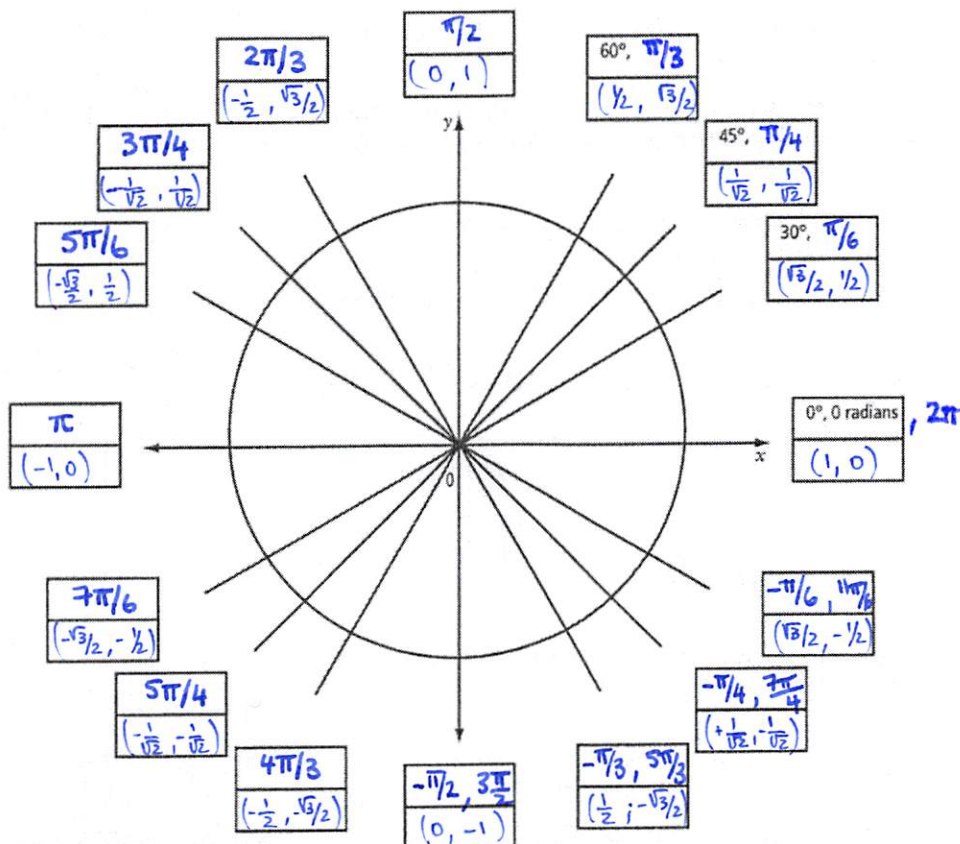
$$195^\circ = \frac{13\pi}{12}$$

$$a = r\theta$$

$$a = 15 \times \frac{13\pi}{12}$$

$$a \approx 51.05 \text{ mm}$$

5. Complete this diagram in radians for $-\frac{\pi}{2} \leq \theta \leq 2\pi$ and give the coordinates of the corresponding points on the unit circle.



6. a) What is the equation of the unit circle?

$$x^2 + y^2 = 1$$

- b) Determine if the following points are on the unit circle or not. Show your work.

i) $(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$

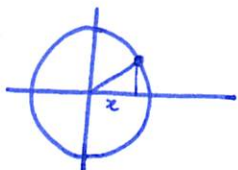
$$(-\frac{\sqrt{2}}{2})^2 + (-\frac{\sqrt{2}}{2})^2 = \frac{2}{4} + \frac{2}{4} = 1 \quad \text{yes!}$$

ii) $(\frac{\sqrt{7}}{2}, -\frac{1}{7})$

$$(\frac{\sqrt{7}}{2})^2 + (-\frac{1}{7})^2 = \frac{7}{4} + \frac{1}{49} \neq 1 \quad \text{no!}$$

7. Determine the missing coordinate for each of the following points on the unit circle. Make a drawing to illustrate your answer.

- a) A $(x, \frac{5}{13})$ dans le quadrant I.



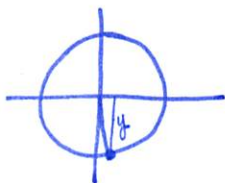
$$x^2 + \frac{25}{169} = 1$$

$$x^2 = \frac{144}{169}$$

x is positive in quad I

$$x = \frac{12}{13}$$

- b) B $(\frac{1}{6}, y)$ dans le quadrant IV



$$\frac{1}{36} + y^2 = 1$$

$$y^2 = \frac{35}{36}$$

y is negative in quad IV

$$y = -\frac{\sqrt{35}}{6}$$

8. Determine the angle θ in standard position $0 \leq \theta \leq 2\pi$, corresponding to the following coordinates:

- a) $P(\theta) = (-1, 0)$



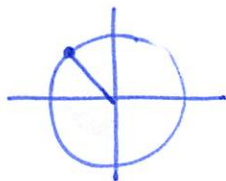
$$\theta = \pi$$

- b) $P(\theta) = (\frac{\sqrt{3}}{2}, -\frac{1}{2})$



$$\theta = \frac{11\pi}{6}$$

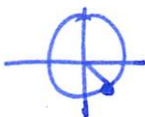
$$c) P(\theta) = \left(-\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$$



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

9. Determine the exact coordinates of the following points on the unit circle.

$$a) P\left(-\frac{\pi}{4}\right)$$



$$P\left(\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}\right)$$

$$b) P\left(\frac{23\pi}{6}\right)$$



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