

Check-in Quiz Section 4.2-4.3:
Special Angles, Trig Ratios and Coordinates in a Unit Circle

Complete the following questions SHOWING ALL WORK and steps where applicable.

1. Determine the missing coordinate of the following: (1 mark)

a) $(-\frac{5}{13}, y)$ in quadrant 3 (QIII)

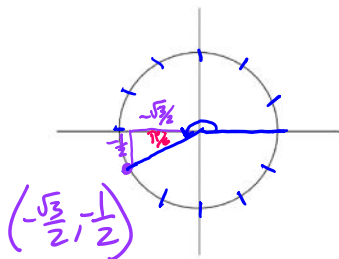
$x^2 + y^2 = 1$
 $(-\frac{5}{13})^2 + y^2 = 1$
 $\frac{25}{169} + y^2 = 1$
 $y^2 = \frac{169}{169} - \frac{25}{169}$
 $y^2 = \frac{144}{169}$
 $y = \pm \frac{12}{13}$
 $y = -\frac{12}{13}$ in QIII

b) $(x, \frac{8}{9})$ in quadrant 2 (QII)

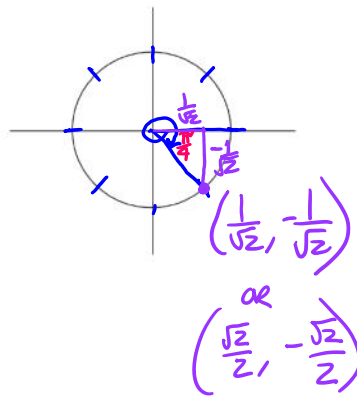
$x^2 + (\frac{8}{9})^2 = 1$
 $x^2 + \frac{64}{81} = 1$
 $\sqrt{x^2} = \sqrt{\frac{17}{81}}$
 $x = \pm \frac{\sqrt{17}}{9}$
 $x = -\frac{\sqrt{17}}{9}$ in QII

2. Determine the exact coordinate in the unit circle of the following (no calculator) and show the location on the unit circle provided: (1.5 marks)

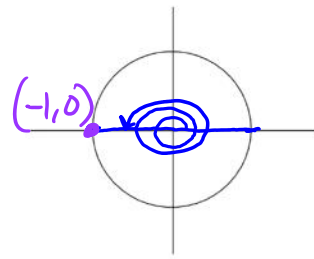
a) $P(\frac{7\pi}{6})$



b) $P(-\frac{9\pi}{4})$

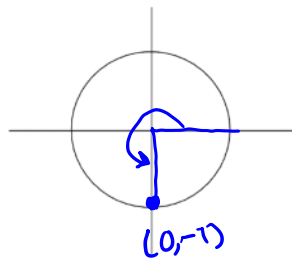


c) $P(5\pi)$



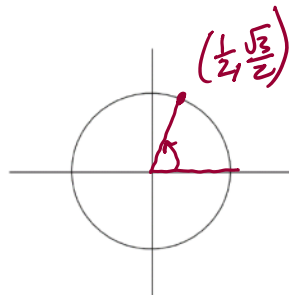
3. Determine the value of the angle, θ , in standard position given the following coordinates in a unit circle (no calculator). Draw your angle in standard position on the unit circle provided. (1.5 marks)

b) $P(\theta) = (0, -1)$
quadrant angle



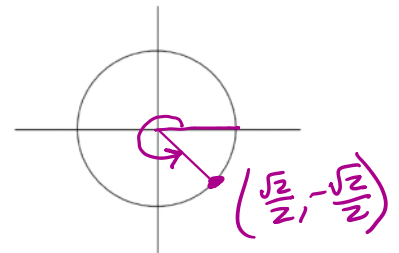
$\theta = \frac{3\pi}{2}$ or 270°

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



$\theta = \frac{\pi}{3}$ or 60°

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



$\theta = \frac{7\pi}{4}$ or 315°

4. Given the point, $P\left(-\frac{2}{7}, \frac{3\sqrt{5}}{7}\right)$, is on the unit circle terminal arm for angle θ , determine the value of all six trigonometric ratios. (1.5 marks)

$\cos \theta = \boxed{-\frac{2}{7}}$

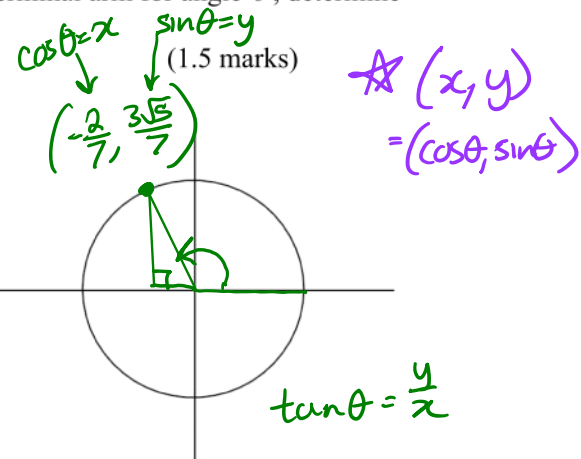
$\sin \theta = \boxed{\frac{3\sqrt{5}}{7}}$

$\tan \theta = \frac{\frac{3\sqrt{5}}{7}}{-\frac{2}{7}} = \frac{3\sqrt{5}}{7} \times -\frac{7}{2} \rightarrow \boxed{-\frac{3\sqrt{5}}{2}}$

$\sec \theta = \boxed{-\frac{7}{2}}$

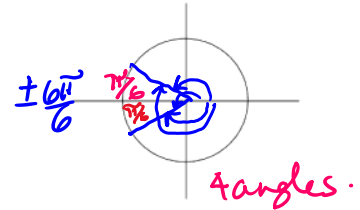
$\csc \theta = \boxed{\frac{7}{3\sqrt{5}}}$ or $\frac{7\sqrt{5}}{15}$

$\cot \theta = \boxed{-\frac{2}{3\sqrt{5}}}$ or $-\frac{2\sqrt{5}}{15}$



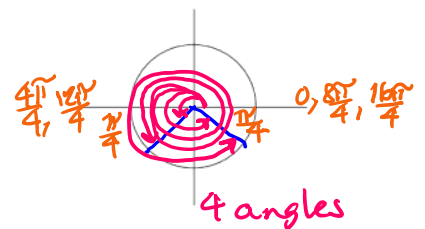
5. Determine the measure of all angles that satisfy the following conditions: (1.5 marks)

a) $\cos \theta = -\frac{\sqrt{3}}{2}, -2\pi \leq \theta < 2\pi$ cosine is negative in quadrants: II + III
 b/c x-coordinate (-)



$$\theta = \underline{-\frac{7\pi}{6}, -\frac{5\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}}$$

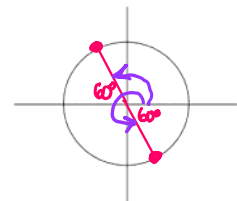
b) $\sin \theta = -\frac{1}{\sqrt{2}}, 0 \leq \theta < 4\pi$ sine is negative in quadrants: III + IV



$$\theta = \underline{\frac{5\pi}{4}, \frac{7\pi}{4}, \frac{13\pi}{4}, \frac{15\pi}{4}}$$

c) $\tan \theta = -\sqrt{3}, 0^\circ \leq \theta < 360^\circ$ tangent is negative in quadrants: II + IV

$\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$ or $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$
 $\tan 60^\circ = \sqrt{3}$ ✓ $\tan 30^\circ = \frac{1}{\sqrt{3}}$ ✗



$$\theta = \underline{120^\circ, 300^\circ}$$