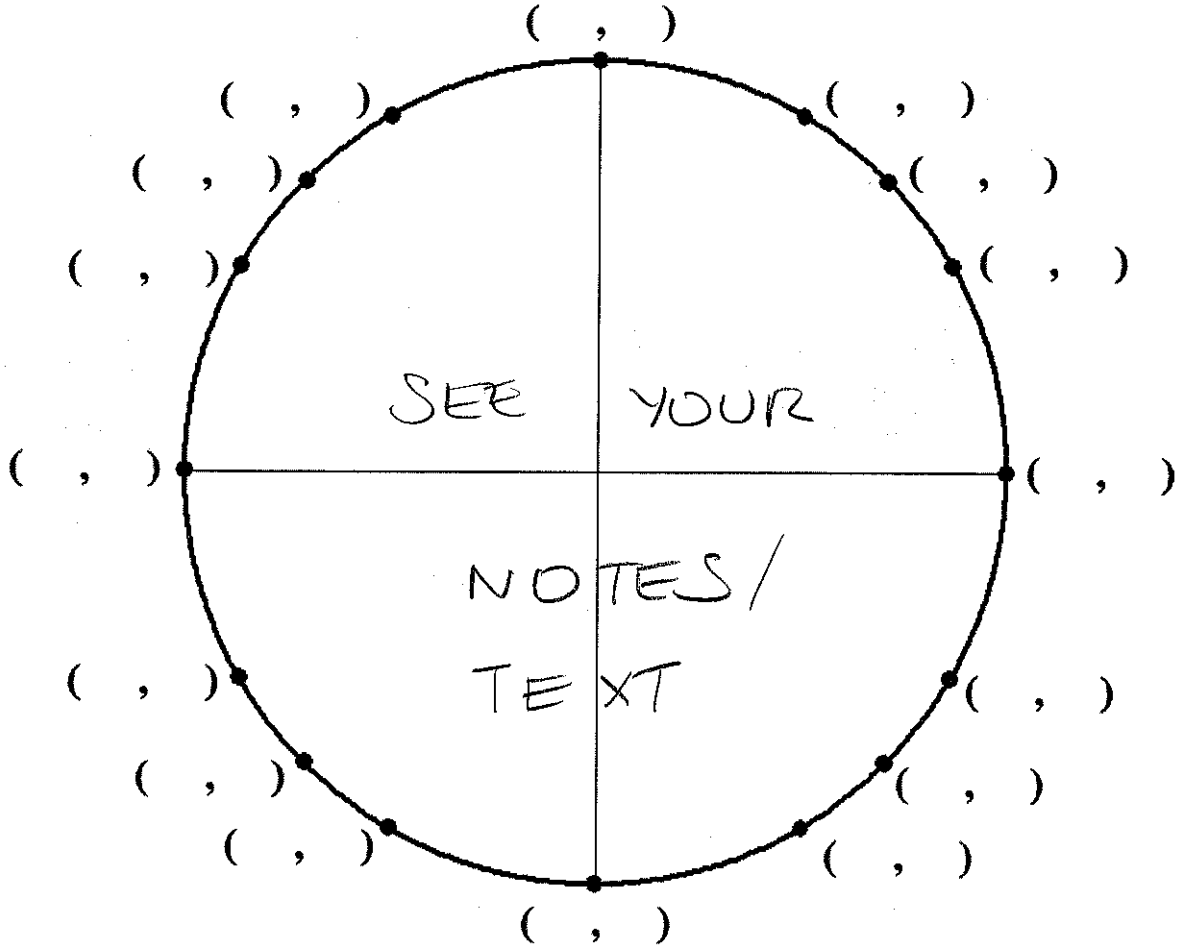
Complete the unit circle below.
Inside the circle, label the radian measure of each point.
Outside the circle, label the corresponding $x-$ and $y-$ coordinates of each point.

SCORE: _____ / 8 PTS
($\frac{1}{2}$ POINT DEDUCTED FOR EACH ERROR)



Use the unit circle above to fill in the blanks below. Simplify all answers (including rationalizing denominators). **SCORE: _____ / 4 PTS**
Write "UNDEFINED" if the expression has no value.

[a] $\csc\pi =$ UNDEFINED $\quad \frac{1}{0} \left(\frac{1}{y}\right)$

[b] $\tan\frac{7\pi}{4} =$ -1 $\quad \frac{-\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} \left(\frac{y}{x}\right)$

[c] $\cot\frac{4\pi}{3} =$ $\frac{\sqrt{3}}{3}$ $\quad \frac{-\frac{1}{2}}{-\frac{\sqrt{3}}{2}} \left(\frac{x}{y}\right)$

[d] $\sec\frac{5\pi}{6} =$ $\frac{-2\sqrt{3}}{3}$ $\quad \frac{1}{-\frac{\sqrt{3}}{2}} \left(\frac{1}{x}\right)$

Fill in the blanks below. Simplify all answers (including rationalizing denominators). **SCORE:** _____ / 5 PTS
Write "UNDEFINED" if the expression has no value.

[a] $-\frac{25\pi}{6}$ is co-terminal with $\frac{11\pi}{6}$ (**NOTE**: Your answer must be between 0 and 2π) $-\frac{25\pi}{6} + 6\pi$

[b] $\cos\left(-\frac{25\pi}{6}\right) = \frac{\sqrt{3}}{2}$

[c] The complement of $\frac{\pi}{5}$ radians is $\frac{3\pi}{10}$ $\frac{\pi}{2} - \frac{\pi}{5}$

[d] 81 degrees = $\frac{9\pi}{20}$ radians $81 \times \frac{\pi}{180}$

[e] $\frac{7\pi}{12}$ radians = 105 degrees $\frac{7\pi}{12} \times \frac{180}{\pi}$

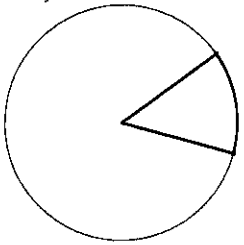
Suppose $\sin t = -\frac{12}{13}$ and $\cos t = \frac{5}{13}$. Fill in the blanks below. Simplify all answers. **SCORE:** _____ / 2 PTS

[a] $\cos(-t) = \frac{5}{13}$ $\cos t$

[b] $\sec t = \frac{13}{5}$ $\frac{1}{\cos t}$

In the diagram of a central angle on the right,
the radius of the circle is 12 mm and the intercepted arc has length 10 mm. (NOTE: The diagram is **NOT** drawn to scale.)

SCORE: _____ / 5 PTS



[a] The central angle is $\frac{5}{6}$ radians. $\frac{10mm}{12mm}$ $\left(\frac{s}{r}\right)$

[b] The area of the intercepted sector is $60\ mm^2$. $\frac{1}{2}(12mm)^2\frac{5}{6}$ $\left(\frac{1}{2}r^2\theta^R\right)$

[c] If an object is moving around the circle at a linear speed of 30 mm/s,

its angular speed is $\frac{5}{2}$ $\frac{RADIANS/s}{\text{(specify the units)}}$. $\frac{30mm/s}{12mm}$ $\left(\begin{matrix}V=rw\\ w=\frac{V}{r}\end{matrix}\right)$