Lista de Atividades 5

Q1: $1\,rad = \frac{180°}{\pi} \approx \frac{180°}{3{,}1416} \approx 57{,}3°$

Q2: $3{,}5\,rad = 3{,}5 \cdot 1\,rad = 3{,}5 \cdot \frac{180°}{\pi} \approx 3{,}5 \cdot 57{,}3° \approx 200{,}55°$

Q3: $15° = 15 \cdot 1° = \overset{\div 15}{15} \cdot \frac{\pi}{\underset{\div 15}{180}} = \frac{\pi}{12}\,rad$

$\frac{\pi}{12} + \frac{7\pi}{4} = \frac{\pi + 21\pi}{12} = \frac{\overset{\div 2}{22\pi}}{\underset{\div 2}{12}} = \frac{11\pi}{6}$

$$\begin{cases} a - b = \frac{\pi}{12}\,rad \\ a + b = \frac{7\pi}{4}\,rad \end{cases}$$

$2a = \frac{11\pi}{6}\,rad$

$a = \frac{11\pi}{6} \div 2$

$a = \frac{11\pi}{6} \times \frac{1}{2}$

$a = \frac{11\pi}{12}\,rad$

$a - b = \frac{\pi}{12}\,rad$

$\frac{11\pi}{12} - b = \frac{\pi}{12}\,rad$

$\frac{11\pi}{12} - \frac{\pi}{12} = b$

$b = \frac{\overset{\div 2}{10\pi}}{\underset{\div 2}{12}} \Rightarrow b = \frac{5\pi}{6}\,rad$

Q4: $\frac{\pi}{12}\,rad = \frac{\pi}{12} \cdot 1\,rad = \frac{\cancel{\pi}}{12} \cdot \frac{180°}{\cancel{\pi}} = \frac{180°}{12} = 15°$

$\frac{\pi}{9}\,rad = \frac{\pi}{9} \cdot \frac{180°}{\pi} = 20°$

$$\begin{cases} a + b + c = 13° & (1) \\ a + b + 2c = 15° & (2) \\ a + 2b + c = 20° & (3) \end{cases}$$

Em (1) $\Rightarrow c = 13° - a - b$

Em (2) $\Rightarrow b = 15° - a - 2c \Rightarrow b = 15° - a - 2 \cdot (13° - a - b)$

$b = 15° - a - 26° + 2a + 2b$

$b - 2b = -11° + a$

$(-1) \cdot -b = -11° + a \Rightarrow b = 11° - a$

Em (3)

$a + 2b + c = 20°$

$a + 2 \cdot (11° - a) + (13° - a - b) = 20°$

$\cancel{a} + 22 - 2a + 13° - \cancel{a} - b = 20°$

$-2a - b = 20° - 35°$

$-2a - (11° - a) = -15°$

$-2a - 11° + a = -15°$

$-11° + 15° = a$

$a = 4°$

$b = 11° - a$

$b = 11° - 4°$

$b = 7°$

$c = 13° - a - b$

$c = 13° - 4° - 7°$

$c = 2°$

Q5: ângulo central $A\hat{O}B = \theta$

comprimento do arco $= s = \frac{2\pi r}{3}$

$s = r \cdot \theta \Rightarrow \frac{2\pi r}{3} = r \cdot \theta \Rightarrow \theta = \frac{2\pi \cancel{r}}{3\cancel{r}} \Rightarrow \theta = \frac{2\pi}{3}$

$\div$

Q6: $s = 7 \cdot 4{,}5 = 31{,}5$ cm

Q7: $2\pi \cong 360° \Rightarrow \frac{2\pi}{7}$ rad $\approx 51{,}4°$

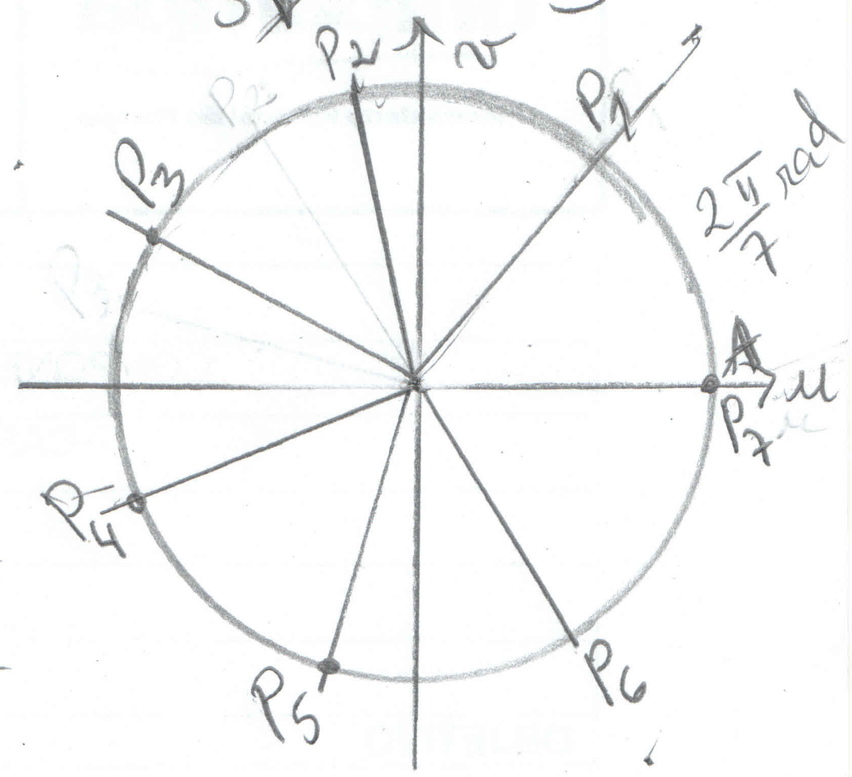
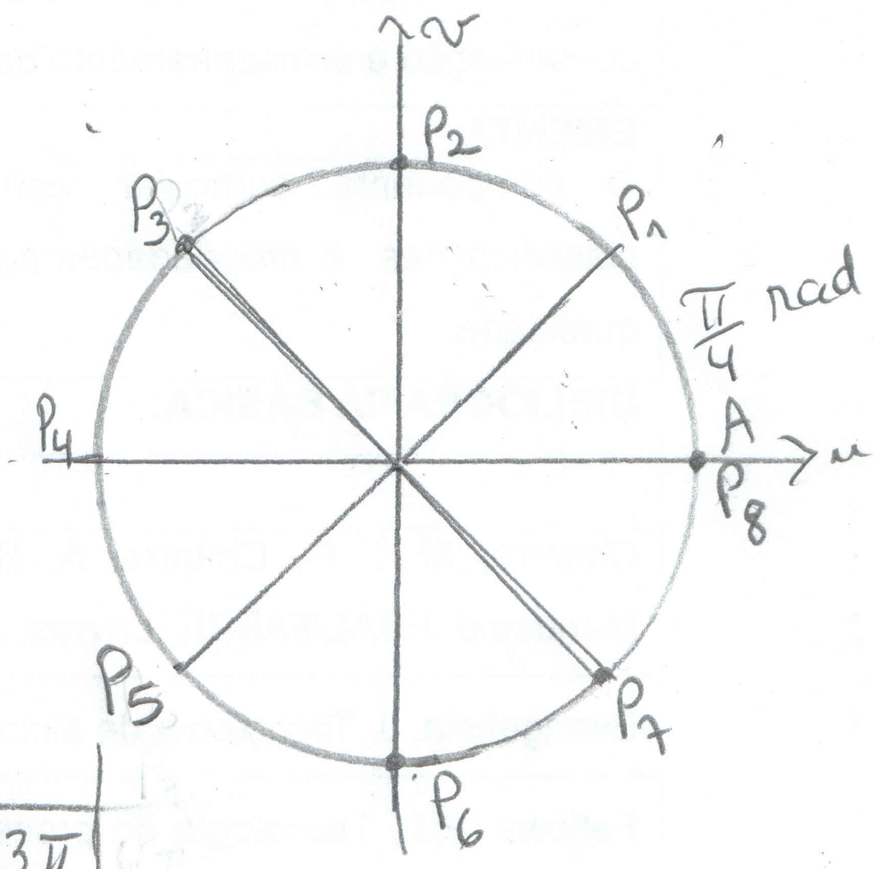


imagem de x	A	P_1	P_2	P_3	P_4	P_5
$\widehat{AP} = x$ rad	0	$\frac{2\pi}{7}$	$2 \cdot \frac{2\pi}{7} = \frac{4\pi}{7}$	$3 \cdot \frac{2\pi}{7} = \frac{6\pi}{7}$	$4 \cdot \frac{2\pi}{7} = \frac{8\pi}{7}$	$5 \cdot \frac{2\pi}{7} = \frac{10\pi}{7}$

P_6	P_7
$6 \cdot \frac{2\pi}{7} = \frac{12\pi}{7}$	$7 \cdot \frac{2\pi}{7} = 2\pi$

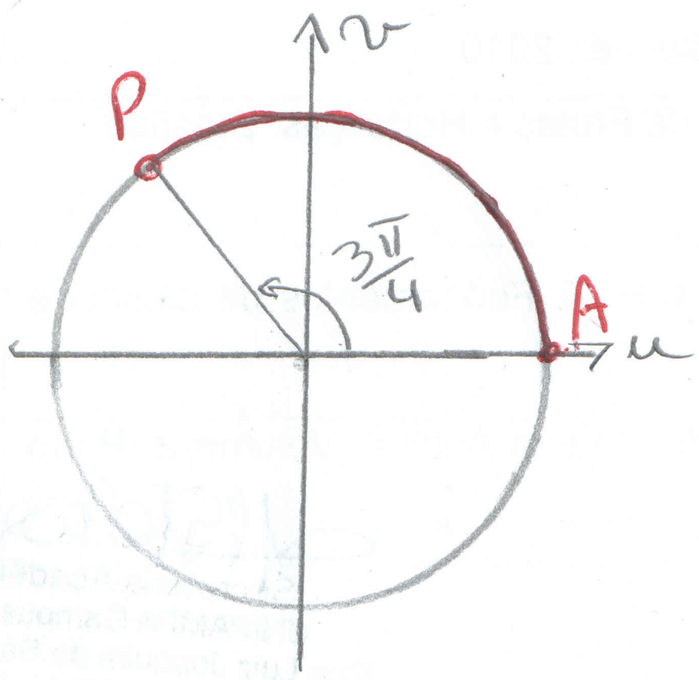


Q8: $2\pi \div 8 = \frac{2\pi}{8} = \frac{\pi}{4}$

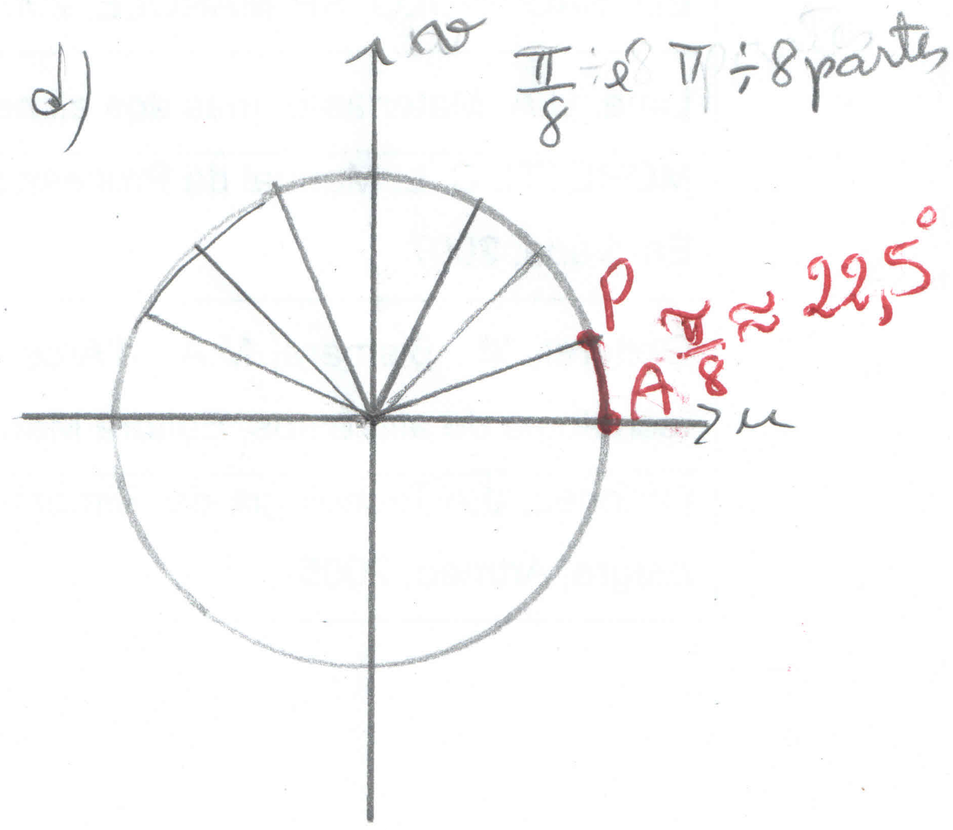
imagem de x	A	P_1	P_2	P_3	P_4	P_5	P_6
$\widehat{AP} = x$ rad	0	$\frac{\pi}{4}$	$\frac{2\pi}{4} = \frac{\pi}{2}$	$\frac{3\pi}{4}$	$\frac{4\pi}{4} = \pi$	$\frac{5\pi}{4}$	$\frac{6\pi}{4} = \frac{3\pi}{2}$

P_7	P_8
$\frac{7\pi}{4}$	$\frac{8\pi}{4} = 2\pi$

Q9: a)

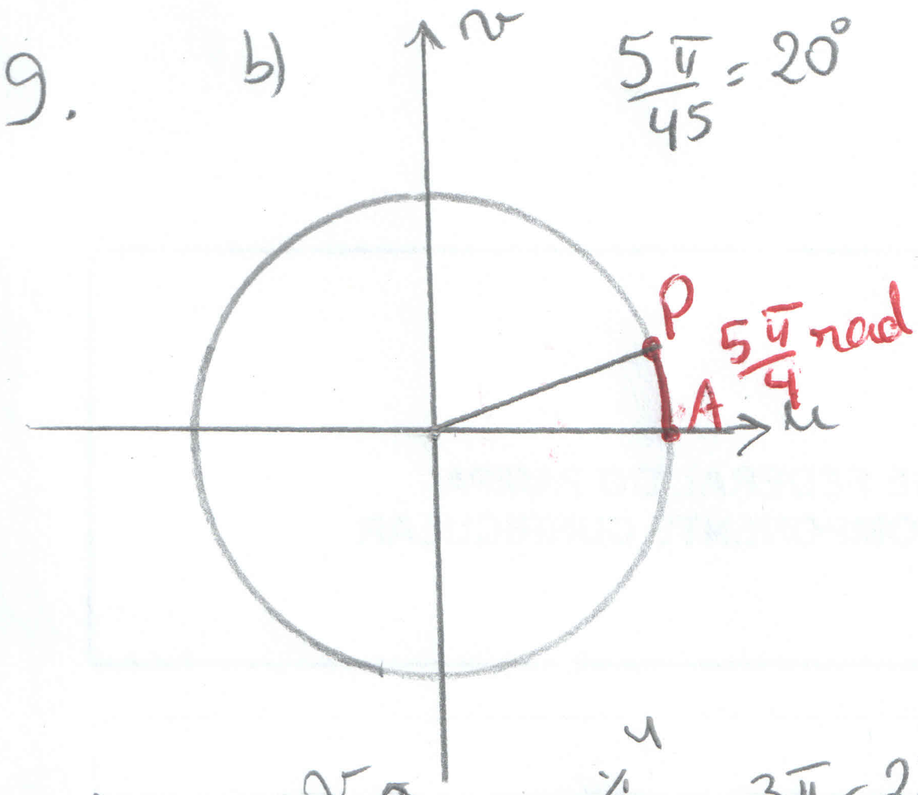


d)

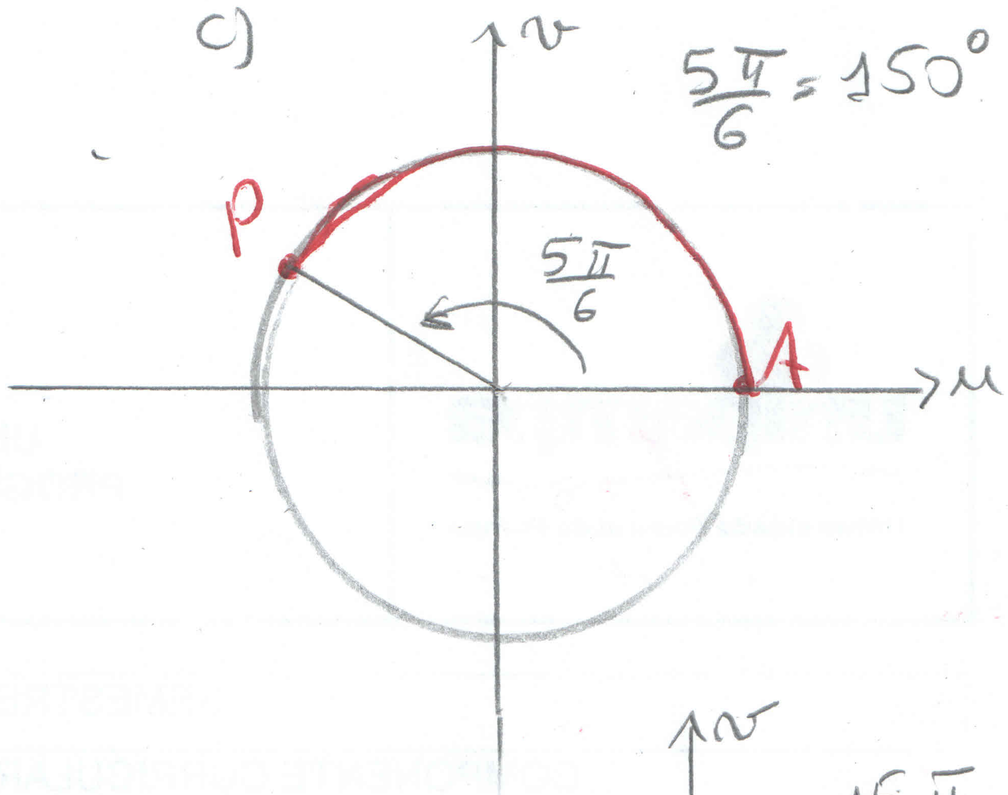


Q9.

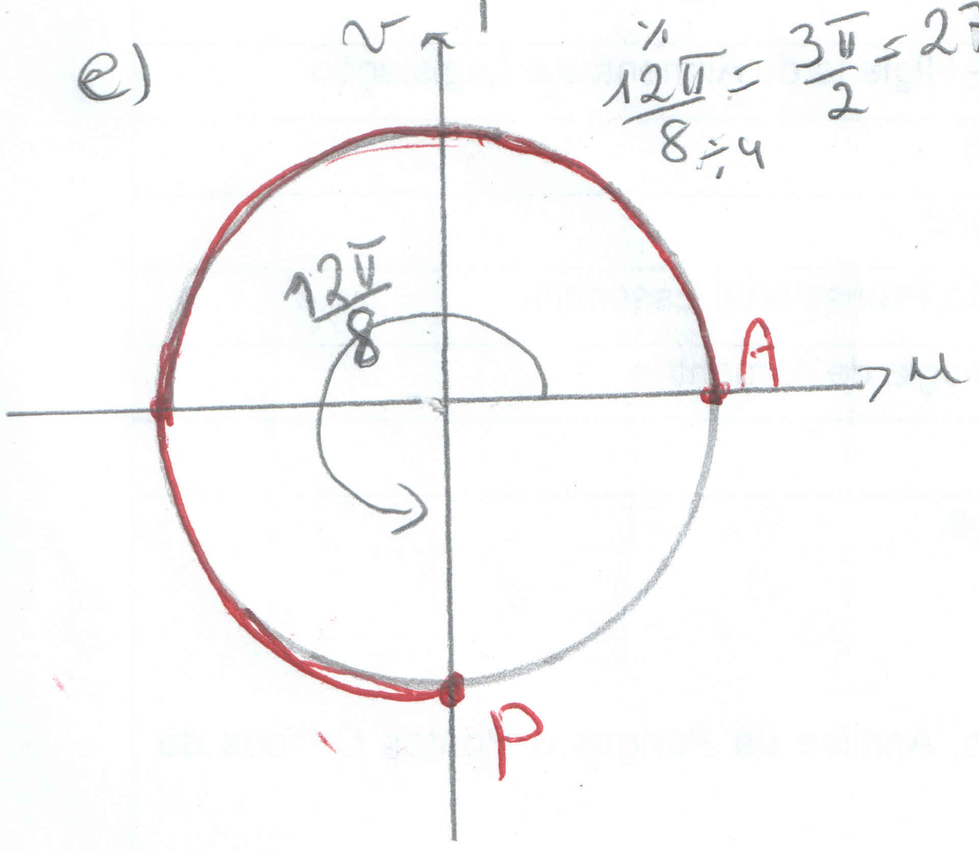
b) $\frac{5\pi}{45} = 20°$



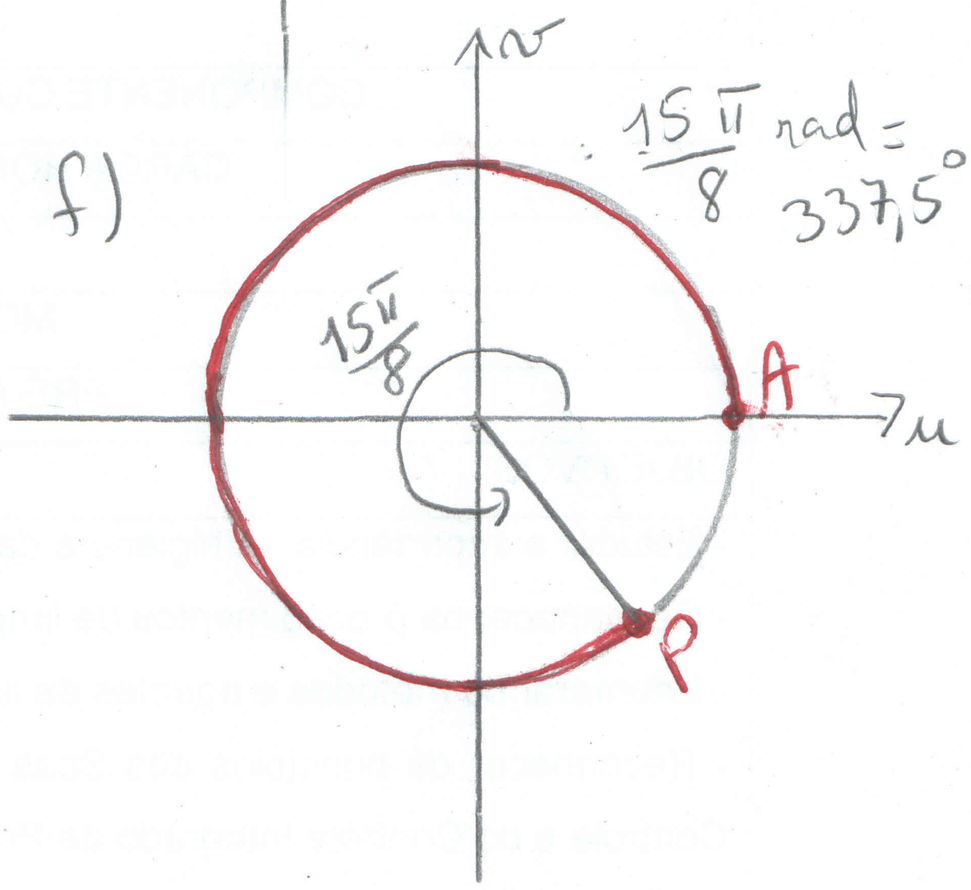
c) $\frac{5\pi}{6} = 150°$



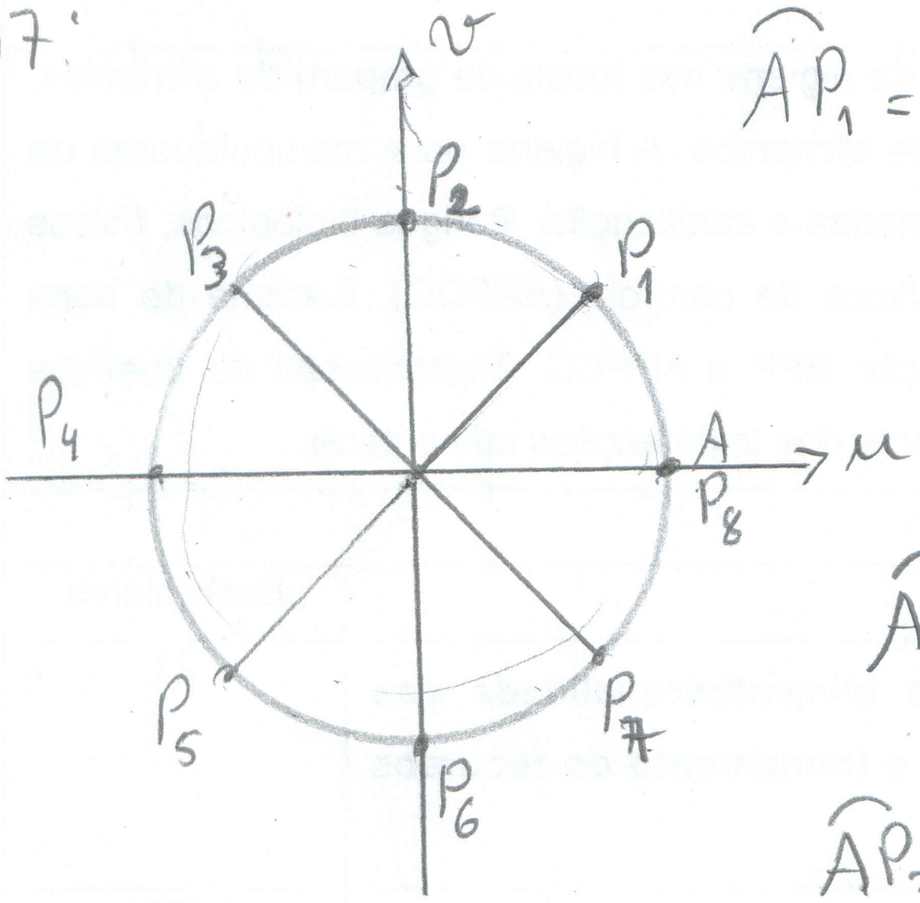
e) $\frac{12\pi}{8} = \frac{3\pi}{2} = 270°$



f) $\frac{15\pi}{8}$ rad $= 337{,}5°$



Q 17:



$\widehat{AP_1} = \frac{\pi}{4}$ $\begin{cases} \text{seno: positivo} \\ \text{cosseno: positivo} \end{cases}$

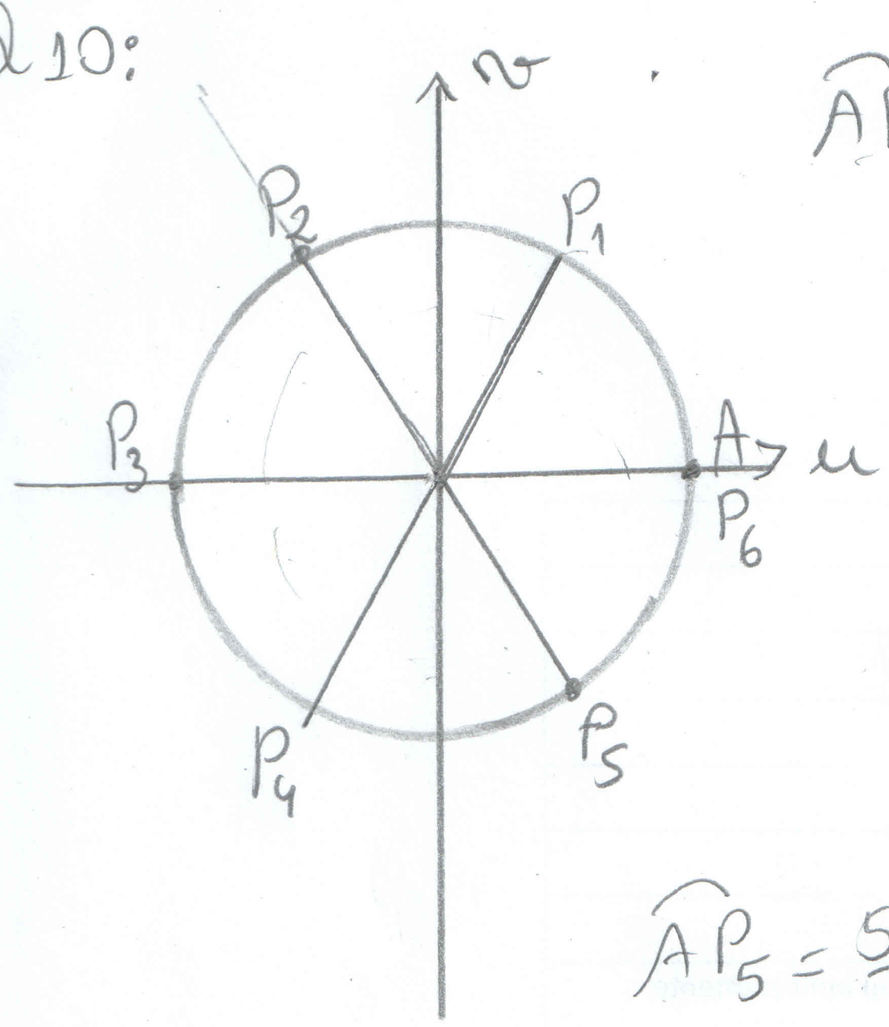
$\widehat{AP_5} = \frac{5\pi}{4}$ $\begin{cases} \text{seno: negativo} \\ \text{cosseno: negativo} \end{cases}$

$\widehat{AP_7} = \frac{7\pi}{4}$ $\begin{cases} \text{seno: negativo} \\ \text{cosseno: positivo} \end{cases}$

$\widehat{AP_3} = \frac{3\pi}{4} \Rightarrow \frac{11\pi}{4} = \frac{3\pi}{4} + 1 \cdot 2\pi \Rightarrow$

$\Rightarrow \begin{cases} \operatorname{sen}\left(\frac{3\pi}{4}\right) = \operatorname{sen}\left(\frac{11\pi}{4}\right) \Rightarrow \text{seno positivo.} \\ \cos\left(\frac{3\pi}{4}\right) = \cos\left(\frac{3\pi}{4}\right) \Rightarrow \text{cosseno negativo.} \end{cases}$

Q10:



$\widehat{AP_1} = \frac{\pi}{3}$ $\begin{cases} \text{seno positivo} \\ \text{coseno positivo.} \end{cases}$

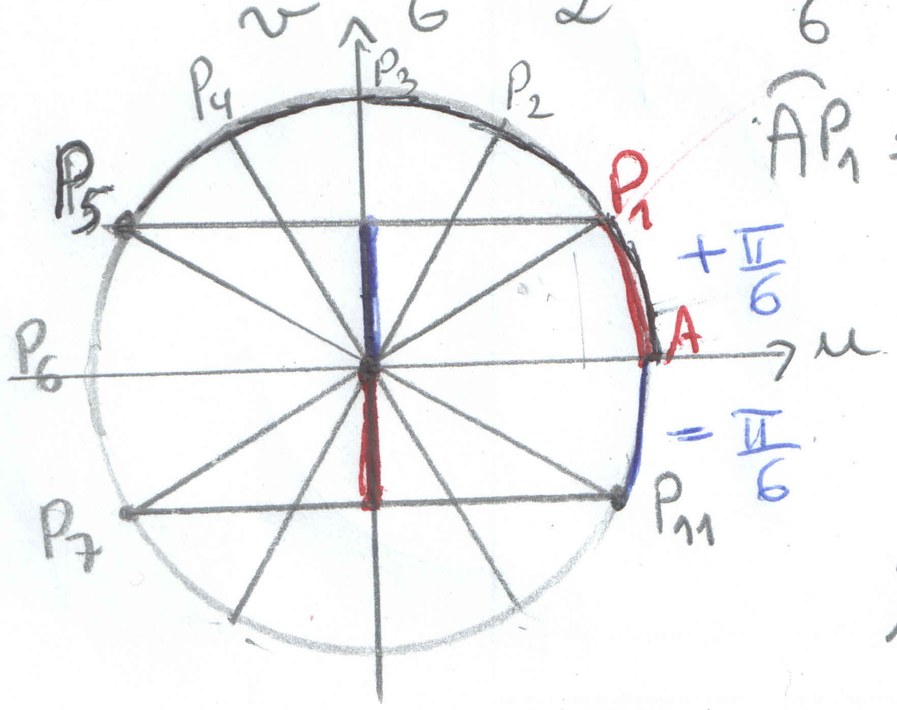
$\widehat{AP_2} = \frac{2\pi}{3}$ $\begin{cases} \text{seno positivo} \\ \text{coseno negativo} \end{cases}$

$\widehat{AP_4} = \frac{4\pi}{3}$ $\begin{cases} \text{seno negativo} \\ \text{coseno negativo.} \end{cases}$

$\widehat{AP_5} = \frac{5\pi}{3}$ $\begin{cases} \text{seno negativo} \\ \text{coseno positivo.} \end{cases}$

Q.11: $\text{sen}\,\frac{\pi}{6} = \frac{1}{2}$

$\frac{\pi}{6} = 30°$



$\widehat{AP_1} = \frac{\pi}{6} \Rightarrow \text{sen}\,\frac{\pi}{6} = \frac{1}{2}$

$\widehat{AP_5} = \frac{5\pi}{6} \Rightarrow \text{sen}\,\frac{5\pi}{6} = \frac{1}{2}$

$\text{sen}\,\frac{\pi}{6} = -\text{sen}\,\frac{\pi}{6} \Rightarrow \text{sen}\,\frac{11\pi}{6} = -\frac{1}{2}$

$\widehat{AP_{11}} = \frac{11\pi}{6}$

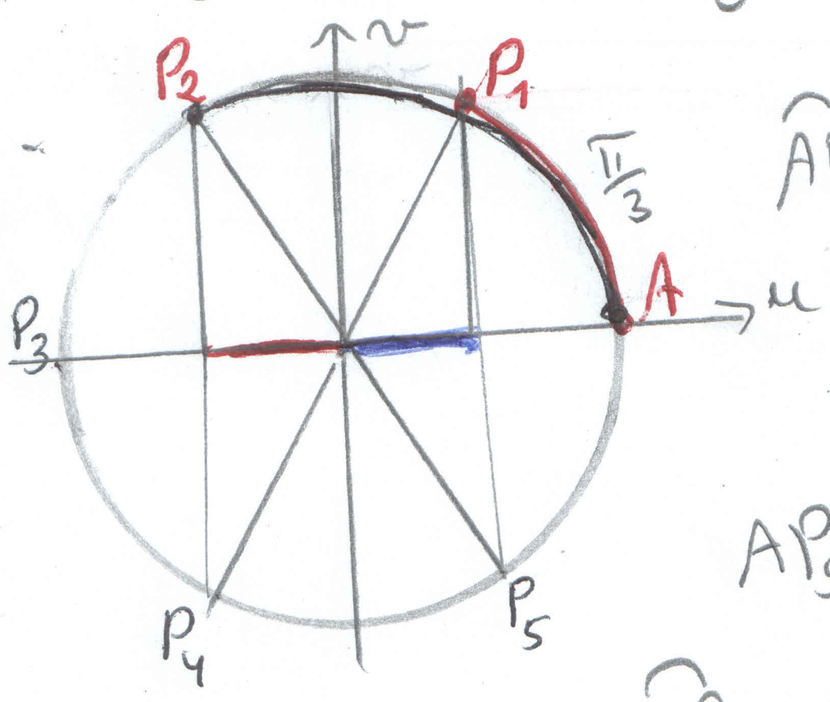
$\text{sen}\,\frac{11\pi}{6} = \text{sen}\,\frac{7\pi}{6} = -\frac{1}{2}$

$\widehat{AP_7} = \frac{7\pi}{6}$

Q12: $\text{sen}\,\frac{\pi}{3} = \frac{\sqrt{3}}{2} \Rightarrow \text{sen}\,\frac{\pi}{3} = \text{sen}\,\frac{2\pi}{3} = \frac{\sqrt{3}}{2}$

$\text{sen}\,\frac{4\pi}{3} = \text{sen}\,\frac{5\pi}{3} = -\frac{\sqrt{3}}{2}$

Q14:



$\widehat{AP_1} = \frac{\pi}{3}$ $\cos\frac{\pi}{3} = \frac{1}{2} \Rightarrow \cos\frac{2\pi}{3} = -\cos\frac{\pi}{3} = -\frac{1}{2}$

$\widehat{AP_2} = \frac{2\pi}{3}$

$AP_5 = -\frac{\pi}{3}$ ou $\frac{5\pi}{3} \Rightarrow \cos\left(-\frac{\pi}{3}\right) = \cos\frac{\pi}{3}$

$\cos\frac{5\pi}{3} = \frac{1}{2}$

$\widehat{AP_4} = \frac{4\pi}{3}$

$\cos\frac{5\pi}{3} = -\cos\frac{4\pi}{3} = -\frac{1}{2}$

Q13: $\cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}$

$\cos\frac{\pi}{6} = \cos\frac{11\pi}{6} = \frac{\sqrt{3}}{2}$

$-\cos\frac{\pi}{6} = \cos\frac{5\pi}{6} = \cos\frac{7\pi}{6} = -\frac{\sqrt{3}}{2}$