2ª Avaliação de Trigonometria – Nº 2.

Q1: $\overset{\frown}{AP} = 6{,}4\,cm$ $\quad s = r.\theta \Rightarrow \theta = \frac{s}{r} \Rightarrow \theta = \frac{6{,}4}{4} = 1{,}6\ rad$

$r = 4\,cm$ $\quad \theta = 1{,}6\,rad = 1{,}6 \cdot \frac{180°}{\pi} \approx \frac{1{,}6 \cdot 180°}{3{,}14} \approx 91{,}7°$

Q2: $\begin{cases} a+b = \frac{7\pi}{9} \\ 2a+b = 180° \end{cases}$ $\quad 180° = \pi\ rad$

$\Rightarrow \begin{cases} a+b = \frac{7\pi}{9} \times (-1) \\ 2a+b = \pi \end{cases} \Rightarrow \begin{cases} -a-b = -\frac{7\pi}{9} \\ 2a+b = \pi \end{cases}$

$a = \frac{2\pi}{9}\ rad$

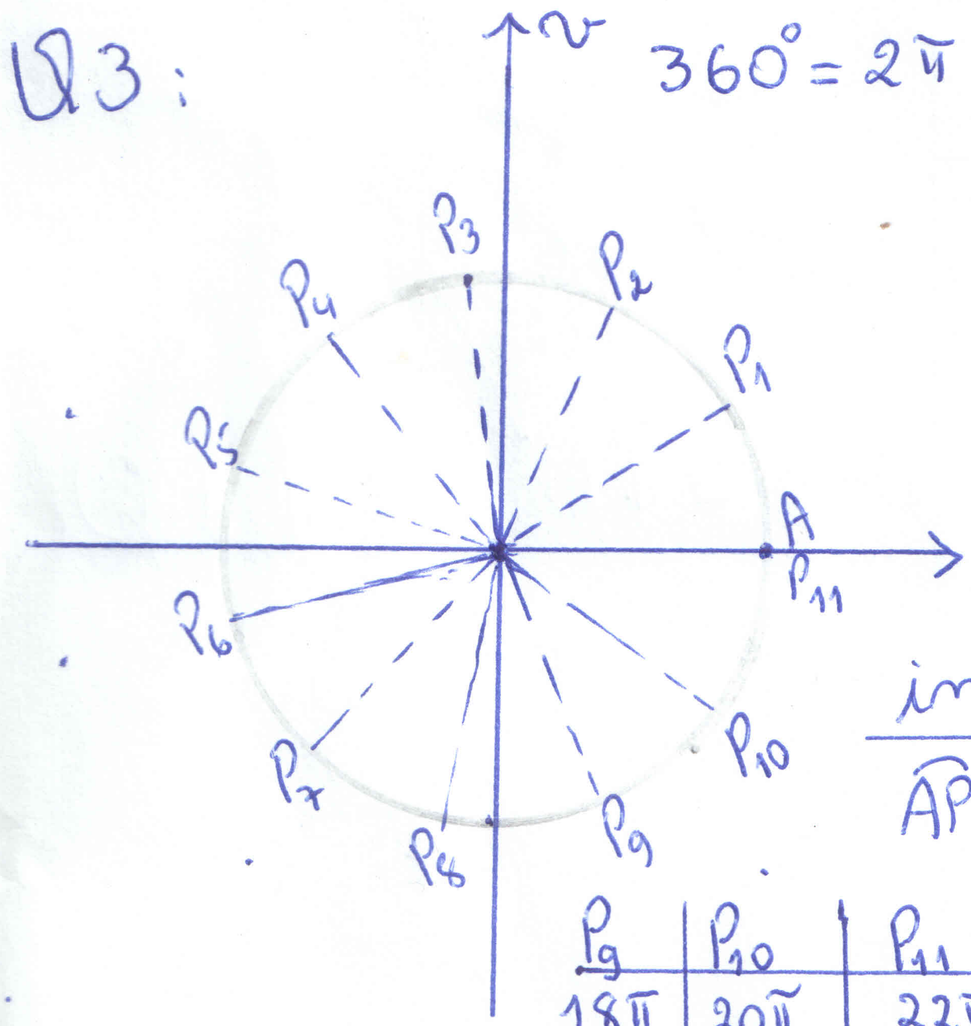
$-\frac{7\pi}{9} + \frac{\pi}{1} = \frac{-7\pi + 9\pi}{9} = \frac{2\pi}{9}$

$a + b = \frac{7\pi}{9}$

$\frac{2\pi}{9} + b = \frac{7\pi}{9}$

$b = \frac{7\pi}{9} - \frac{2\pi}{9} \Rightarrow b = \frac{5\pi}{9}\ rad$

Q3:



$360° = 2\pi \Rightarrow 2\pi \div 11 = \frac{2\pi}{11} \approx 32{,}7° \approx 33°$

$\overset{\frown}{AP_1} = \frac{2\pi}{11}$; $\overset{\frown}{P_1P_2} = \frac{4\pi}{11}$; $\overset{\frown}{P_2P_3} = \frac{6\pi}{11}$; $\overset{\frown}{P_3P_4} = \frac{8\pi}{11}$;

$\overset{\frown}{P_4P_5} = \frac{10\pi}{11}$; $\overset{\frown}{P_6P_7} = \frac{12\pi}{11}$; $\overset{\frown}{P_7P_8} = \frac{14\pi}{11}$; $\overset{\frown}{P_8P_9} = \frac{16\pi}{11}$

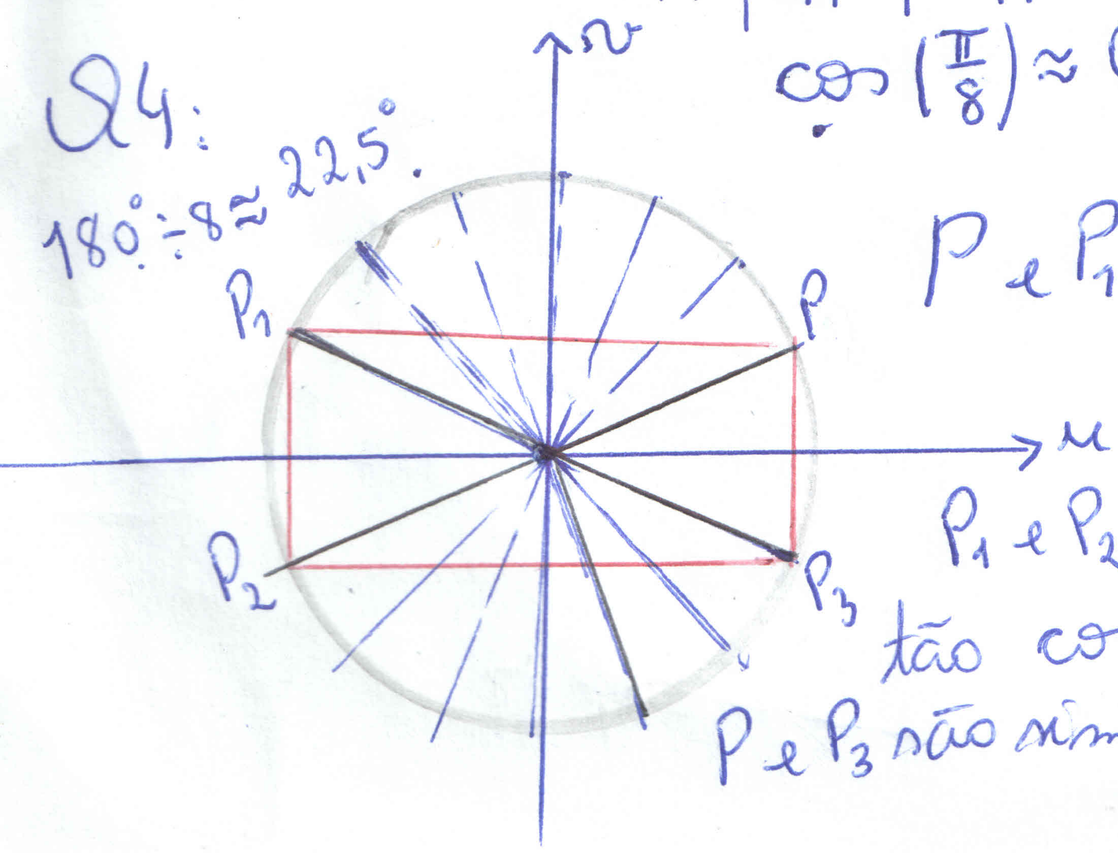
$\overset{\frown}{P_9P_{10}} = \frac{18\pi}{11}$; $\overset{\frown}{P_{10}P_{11}} = \frac{20\pi}{11}$; $\overset{\frown}{P_{11}A} = \frac{22\pi}{11}$

imagem de x	A	P_1	P_2	P_3	P_4	P_5	P_6	P_7	P_8
$\overset{\frown}{AP} = x\ rad$	0	$\frac{2\pi}{11}$	$\frac{4\pi}{11}$	$\frac{6\pi}{11}$	$\frac{8\pi}{11}$	$\frac{10\pi}{11}$	$\frac{12\pi}{11}$	$\frac{14\pi}{11}$	$\frac{16\pi}{11}$

P_9	P_{10}	P_{11}
$\frac{18\pi}{11}$	$\frac{20\pi}{11}$	$\frac{22\pi}{11}$

Q4:

$180° \div 8 \approx 22{,}5°$



$\cos\left(\frac{\pi}{8}\right) \approx 0{,}927$ $\quad \theta = \frac{\pi}{8}$; $\theta_1 = \frac{7\pi}{8}$; $\theta_2 = \frac{9\pi}{8}$ e $\frac{15\pi}{8}$

P e P_1 são simétricos em relação ao eixo $\vec{v}$, então $\cos\left(\frac{\pi}{8}\right) = -\cos\left(\frac{7\pi}{8}\right) \Rightarrow \cos\left(\frac{7\pi}{8}\right) \approx -0{,}927$

P_1 e P_2 são simétricos em relação ao eixo $\vec{u}$, então $\cos\left(\frac{7\pi}{8}\right) = \cos\left(\frac{9\pi}{8}\right) \approx -0{,}927$

P e P_3 são simétricos em relação ao eixo $\vec{u}$, então $\cos\left(\frac{\pi}{8}\right) = \cos\left(\frac{15\pi}{8}\right) \approx 0{,}927$

Q5: $f(x) = -2\,sen(3x) \Rightarrow f: \mathbb{R} \to [-2, 2]$

$D(f) = \mathbb{R}$; $Im(f) = [-2, 2]$

Tomando o intervalo $[a,b] = \left[0, \frac{2\pi}{3}\right]$ no domínio, temos

$\Delta x = \frac{2\pi}{3} - 0 = \frac{2\pi}{3} \Rightarrow$ período $= \frac{2\pi}{3}$

A amplitude da imagem será dobrada e invertida em relação ao eixo x e comprimida em relação ao eixo y.

Q6: funções circulares de x: $sec(x) \approx -1{,}05$

$sec(x) = \frac{1}{cos(x)} \Rightarrow -1{,}05 = \frac{1}{cos(x)} \Rightarrow cos(x) = \frac{1}{-1{,}05} \Rightarrow cos(x) \approx -0{,}952$

$\times$ $\div$

$sen^2(x) + cos^2(x) = 1$

$sen^2(x) + (-0{,}952)^2 = 1$

$sen^2(x) + 0{,}906304 = 1$

$sen^2(x) \approx 1 - 0{,}906304$

$sen(x) \approx \sqrt{0{,}093696}$

$sen(x) \approx 0{,}3061$

$cossec(x) = \frac{1}{sen(x)} \Rightarrow cossec(x) \approx \frac{1}{0{,}3061}$

$cossec(x) \approx 3{,}267$

$tg(x) = \frac{sen(x)}{cos(x)} \approx \frac{0{,}3061}{-0{,}952} \approx -0{,}322$

$cotg(x) = \frac{cos(x)}{sen(x)} \approx \frac{-0{,}952}{0{,}3061} \approx -3{,}11$

Q7: $|sen(x)| \leq 1$ $\quad sen(x) = \frac{t+6}{2t}$

$\left|\frac{t+6}{2t}\right| \leq 1$

$-1 \leq \frac{t+6}{2t} \leq 1$

$-1 \leq \frac{t+6}{2t}$

$\times$

$-2t \leq t+6$

$-6 \leq t + 2t$

$-6 \leq 3t$

$-\frac{6}{3} \leq t$

$-2 \leq t$

$\frac{t+6}{2t} \leq 1$ $\times$

$t + 6 \leq 2t$

$t - 2t \leq -6$

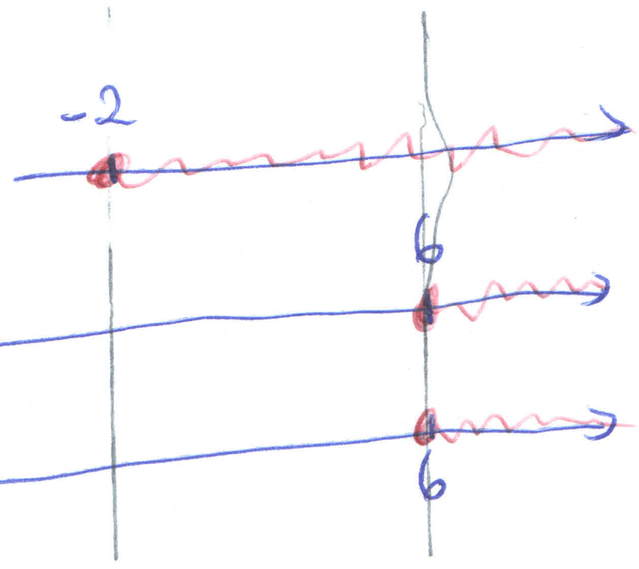
$(-1) \times -t \leq -6 \times (-1)$

$t \geq 6$

$t \geq -2$

$t \geq 6$

$\cap$



Assim, $t \geq 6$ (ou $6 \leq t$).