Matemática C - Ciência da Computação

Trabalho Final

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1-a) $\operatorname{Sen} \frac{4\pi}{3} = \frac{4\pi}{3} - \pi$

$\frac{4\pi - 3\pi}{3} = \frac{\pi}{3} = -\operatorname{Sen} \frac{\pi}{3}$

1-b) $\operatorname{Sen} \frac{5\pi}{6} = \operatorname{sen}\left(\pi - \frac{5\pi}{6}\right) = \operatorname{sen} \frac{\pi}{6}$

1-c) $\operatorname{Sen} \frac{5\pi}{3} = \operatorname{sen}\left(2\pi - \frac{5\pi}{3}\right) =$

$-\operatorname{sen} \frac{\pi}{3} = -\operatorname{Cos}\left(\frac{\pi}{2} - \frac{\pi}{3}\right) = -\cos \frac{\pi}{6}$

1-d) $\operatorname{Cos} \frac{2\pi}{3} \cos 120^\circ \quad -(180^\circ - 120^\circ) = -\cos 60^\circ = -\cos \frac{\pi}{3}$

1-e) $\operatorname{Cos} \frac{7\pi}{6} = \cos 210^\circ \quad -(210^\circ - 180^\circ) = -\cos 30^\circ = -\cos \frac{\pi}{6}$

1-f) $\operatorname{Cos} \frac{4\pi}{3} = \cos 240^\circ \quad -(240^\circ - 180^\circ) = -\cos 60^\circ = -\cos \frac{\pi}{3}$

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2- $\text{Sen } 45 = \frac{b}{a}$ $\quad$ $\text{Tg } 45 = \frac{b}{4}$

$a = \frac{b}{\text{sen } 45} = a \cong 4,88$ $\quad$ $b = 4 \cdot \text{tg } 45$

$b \cong 2,8$

3- $\text{Sen}(70) = 0,94 = \text{Sen}(70) = \frac{\Delta x}{25} = \Delta x = 0,94 \cdot 25$

$\Delta x = 23,49$

2 Mts. base até o solo $= 23,49 + 2 = \boxed{25,49}$

4- $T = 10°$ 12 m $\rightarrow$ $Dp = \frac{\text{Senco}}{\text{hip}} \rightarrow \text{hip} = \frac{12}{0,1736} = 60,1244$ m

$13°$ 12 m $\rightarrow$ $Dp = \frac{\text{senco}}{\text{hip}} \rightarrow \text{hip} = \frac{12}{0,225} = 53,33$ m

II adj = cat. hip $\rightarrow$ $69,1244 \cdot 0,9848 = 68,0737$

$\rightarrow$ $53,3333 \cdot 0,9744 = 51,9676$

$68,0737 - 51,9676 \cong \boxed{16,1 \text{ m}}$

5- $\text{Sen } 45 = \frac{20}{d2} \rightarrow d2 = \frac{20}{\text{sen } 45} \rightarrow d2 = \frac{20}{\left(\frac{\sqrt{2}}{2}\right)} \rightarrow d2 = \frac{40}{\sqrt{2}} =$

$\boxed{20\sqrt{2}}$

$d1^2 = (30 + 10)^2 + 20^2$

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$d1^2 = 900 + 400 = \boxed{d1 = 10\sqrt{13}}$

6- $\frac{\Delta}{\text{sen } 90} = \frac{x}{\text{sen } 45}$

$x = \frac{\Delta\sqrt{2}}{2} = 4\sqrt{2}$ cm

$V = \pi \cdot r^2 \cdot h$

$V = 3^2 \cdot 4\sqrt{2} \cdot \pi$

$V = 9 \cdot 4\sqrt{2} \cdot \pi$

$V = 36\sqrt{2} \cdot \pi \text{ cm}^3$

7- $l = \frac{\alpha \cdot \pi \cdot r}{180^\circ} \rightarrow \frac{160^\circ \cdot \pi \cdot 6}{180^\circ} \rightarrow \frac{16\pi}{3}$

$2\pi r = 2 \cdot \pi \cdot 6 = 12\pi \rightarrow 12\pi - 16\pi/3 \rightarrow \boxed{\frac{20\pi}{3}\ cm = C}$

$r \rightarrow r = \frac{l \cdot 180^\circ}{\alpha \cdot \pi} \rightarrow \frac{76 \cdot 180^\circ}{229 \cdot \pi} \rightarrow \boxed{r = 19\ cm}$

8- $l = \frac{\alpha \cdot \pi \cdot r}{180^\circ}$

$\alpha = \frac{l \cdot 180}{\pi \cdot r} \rightarrow \frac{3\ cm \cdot 180}{\pi \cdot 10} \rightarrow \frac{54}{3,14} = 17,19$

$\boxed{\alpha = 17^\circ 11' 19''}$

9- a) $\sin 30^\circ = h/a \rightarrow \frac{1}{2} = \frac{h}{a} \rightarrow a = 2h$

$(2h)^2 = h^2 + y \rightarrow y = 3h$

b) $\frac{\sqrt{3}}{2} = \frac{h}{hip} \rightarrow \frac{2h}{\sqrt{3}} \rightarrow b = \frac{2\sqrt{3}\,h}{3}$

$\left(\frac{2\sqrt{3}}{2}\right)^2 = h^2 + x^2 \quad \frac{3,3}{9}h = x = h$

$x = h \quad y = 3h$

$\boxed{y = 3x}$

10- $\cos(20) = \frac{4-h}{3}$

$0,94 = \frac{4-h}{3}$

$2,82 = 4 - h$

$\boxed{h = 1,18\ m}$