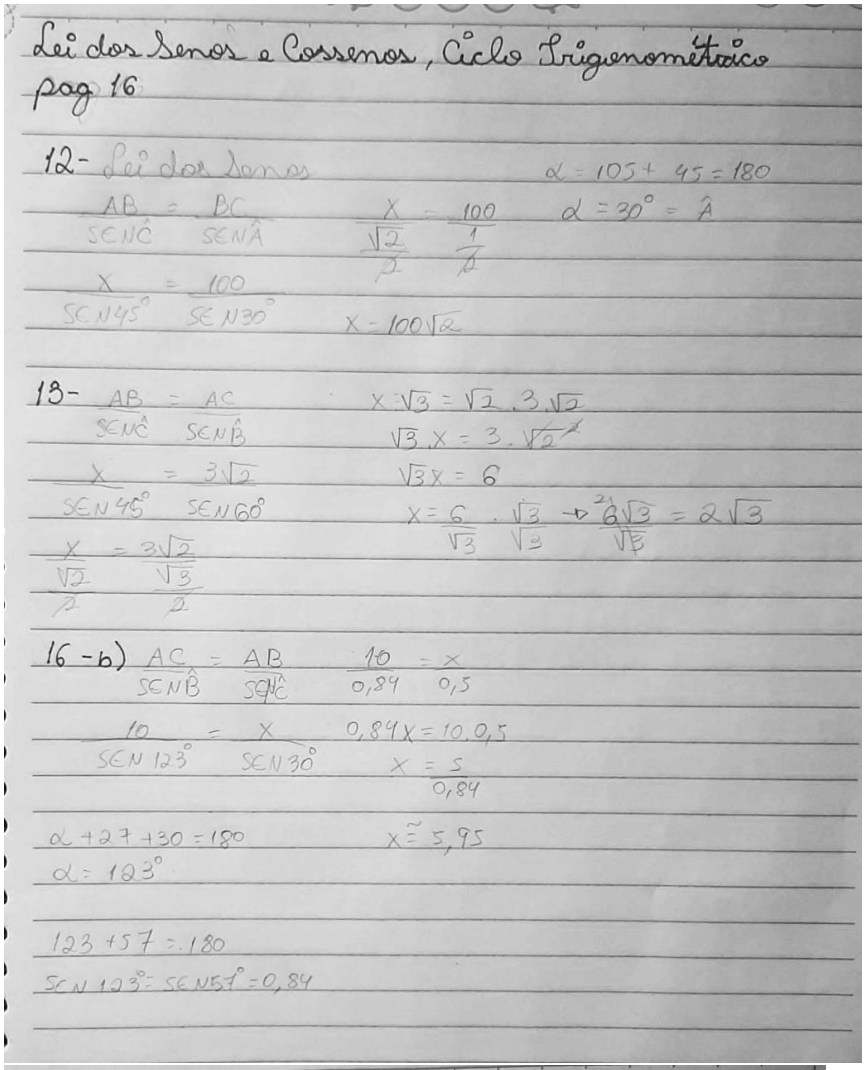
Nome: Giulia Ventura Favaro – 2° DS



Lei dos Senos e Cossenos, Ciclo Trigonométrico
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12- Lei dos Senos

$\frac{AB}{SEN\hat{C}} = \frac{BC}{SEN\hat{A}}$

$\frac{x}{SEN45^\circ} = \frac{100}{SEN30^\circ}$

$\frac{x}{\frac{\sqrt{2}}{\cancel{2}}} = \frac{100}{\frac{1}{\cancel{2}}}$

$x = 100\sqrt{2}$

$\alpha = 105 + 45 = 180$

$\alpha = 30^\circ = \hat{A}$

13- $\frac{AB}{SEN\hat{C}} = \frac{AC}{SEN\hat{B}}$

$\frac{x}{SEN45^\circ} = \frac{3\sqrt{2}}{SEN60^\circ}$

$\frac{x}{\frac{\sqrt{2}}{\cancel{2}}} = \frac{3\sqrt{2}}{\frac{\sqrt{3}}{\cancel{2}}}$

$x \cdot \sqrt{3} = \sqrt{2} \cdot 3 \cdot \sqrt{2}$

$\sqrt{3} \cdot x = 3 \cdot \sqrt{2}^{\cancel{2}}$

$\sqrt{3}x = 6$

$x = \frac{6}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} \rightarrow \frac{\overset{2}{\cancel{6}}\sqrt{3}}{\cancel{\sqrt{3}}} = 2\sqrt{3}$

16 - b) $\frac{AC}{SEN\hat{B}} = \frac{AB}{SEN\hat{C}}$

$\frac{10}{SEN123^\circ} = \frac{x}{SEN30^\circ}$

$\frac{10}{0,84} = \frac{x}{0,5}$

$0,84x = 10 \cdot 0,5$

$x = \frac{5}{0,84}$

$x \cong 5,95$

$\alpha + 27 + 30 = 180$

$\alpha = 123^\circ$

$123 + 57 = 180$

$SEN123^\circ = SEN57^\circ = 0,84$

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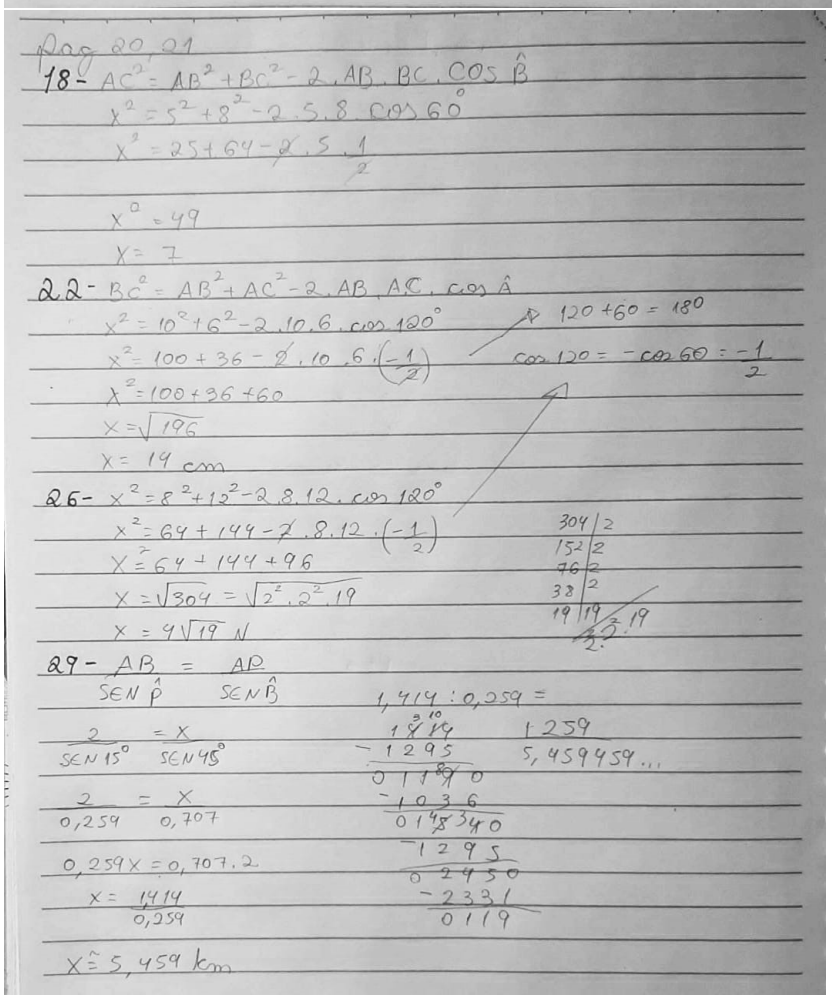
18- $AC^2 = AB^2 + BC^2 - 2 \cdot AB \cdot BC \cdot \cos\hat{B}$

$x^2 = 5^2 + 8^2 - 2 \cdot 5 \cdot 8 \cdot \cos 60^\circ$

$x^2 = 25 + 64 - \cancel{2} \cdot 5 \cdot \frac{1}{\cancel{2}}$



$x^2 = 49$

$x = 7$

22- $BC^2 = AB^2 + AC^2 - 2 \cdot AB \cdot AC \cdot \cos\hat{A}$

$x^2 = 10^2 + 6^2 - 2 \cdot 10 \cdot 6 \cdot \cos 120^\circ$

$x^2 = 100 + 36 - \cancel{2} \cdot 10 \cdot 6 \cdot \left(-\frac{1}{\cancel{2}}\right)$

$x^2 = 100 + 36 + 60$

$x = \sqrt{196}$

$x = 14$ cm

$120 + 60 = 180$

$\cos 120 = -\cos 60 = -\frac{1}{2}$

26- $x^2 = 8^2 + 12^2 - 2 \cdot 8 \cdot 12 \cdot \cos 120^\circ$

$x^2 = 64 + 144 - \cancel{2} \cdot 8 \cdot 12 \cdot \left(-\frac{1}{2}\right)$

$x^2 = 64 + 144 + 96$

$x = \sqrt{304} = \sqrt{2^2 \cdot 2^2 \cdot 19}$

$x = 4\sqrt{19}$ N

304	2
152	2
76	2
38	2
19	19

$\cancel{2^2} \cdot 19$

29- $\frac{AB}{SEN\hat{P}} = \frac{AP}{SEN\hat{B}}$

$\frac{2}{SEN15^\circ} = \frac{x}{SEN45^\circ}$

$\frac{2}{0,259} = \frac{x}{0,707}$

$0,259x = 0,707 \cdot 2$

$x = \frac{1,414}{0,259}$

$x \cong 5,459$ km

$1,414 : 0,259 =$

$1\overset{3}{\cancel{4}}\overset{10}{\cancel{1}}4$
-1295
$0119\overset{8}{\cancel{0}}$
-1036
$01\overset{4}{\cancel{5}}\overset{3}{\cancel{4}}0$
-1295
02450
-2331
0119

1259
$5,459459...$

30- $\frac{AC}{SEN\hat{B}} = \frac{AB}{SEN\hat{C}}$ $\quad 132° + 48 = 180$ $\quad -2$

$\frac{X}{SEN36°} = \frac{140}{SEN132}$ $\quad SEN\,132° = SEN\,48°$

$\frac{X}{0,588} = \frac{140}{0,743}$ $\quad SEN\,48° = 0,743$ $\quad -4$

$X \cdot 0,743 = 0,588 \cdot 140$

$X = \frac{82,32}{0743} \cong 110,8\ km$

31-

P: $60° + \theta = 180$ $\quad V^2 = 20^2 + 10^2 - (2 \cdot 20 \cdot 10 \cdot \cos 120°)$ $\quad -3$

$\theta = 120$ $\quad V^2 = 400 + 100 - 2 \cdot 20 \cdot 10\left(-\frac{1}{2}\right)$

AS: $120 + 60 = 180$ $\quad V^2 = 400 + 100 + 200$

$\cos 120° = -\cos 60°$ $\quad V = \sqrt{700} \cong 26,5$

$-\cos 60 = -\frac{1}{2}$ $\quad V = \sqrt{100 \cdot 7} = 10\sqrt{7}$ $\quad -2$

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1 c) $210° \cdot \frac{\pi\ rad}{180} = \frac{21\pi\ rad}{18} \overset{:3}{=} \frac{7\pi\ rad}{6}$

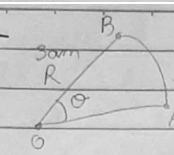
e) $120° \cdot \frac{\pi\ rad}{180} \overset{:6}{=} \frac{2\pi\ rad}{3}$

f) $135° \cdot \frac{\pi\ rad}{180} \overset{:5}{=} \frac{27\pi\ rad}{36} \overset{:9}{=} \frac{3\pi\ rad}{4}$

2 b) $\frac{\pi\ rad}{2} \cdot \frac{180}{\pi\ rad} = \frac{180}{2} = 90°$

d) $\frac{5\pi\ rad}{6} \cdot \frac{180}{\pi\ rad} = \frac{5 \cdot \overset{30}{180}}{6} = 150°$

f) $\frac{4\pi\ rad}{3} \cdot \frac{180}{\pi\ rad} = \frac{4 \cdot \overset{60}{180}}{3} = 240°$

3- 

$l = 15\ cm$ $\quad \theta = \frac{l}{R} \Rightarrow \theta = \frac{15}{3} \Rightarrow 5\ rad$ $\quad -0,8$

4- $\theta = 45° \quad \frac{\pi\ rad}{180°} \overset{:45}{=} \frac{\pi\ rad}{4}$

$\theta = \frac{l}{R} \Rightarrow \frac{\pi}{4} = \frac{l}{2} \Rightarrow \frac{\pi}{4 \cdot 2} \cdot 2 = l$

$l = \frac{\pi}{2} \cong \frac{3,14}{2} \Rightarrow l = 1,57\ cm$ $\quad -1,8$

5- a) $\theta = \frac{l}{R}$ $\quad$ b) $\theta = \frac{4\pi}{6} \overset{:2}{}$

$\alpha = \frac{12}{10}$ $\quad \theta = \frac{2\pi\ rad}{3}$

$\alpha = 1,2\ rad$

6- $\theta = 60°$ $\quad \theta = 60° \cdot \frac{\pi\ rad}{180} \overset{:6}{=} \frac{\pi\ rad}{3}$

$R = 15\ cm$

$l = ?$ $\quad \theta = \frac{l}{R} \quad \frac{\pi}{3} = \frac{l}{15}$

$\pi \cong 3,14$

$3l = \pi \cdot 15$

$l = \frac{\pi \cdot 15^5}{\cancel{3}} \Rightarrow l = 3,14 \cdot 5 = 15,7\ cm$