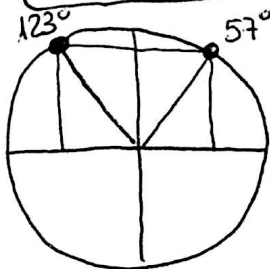
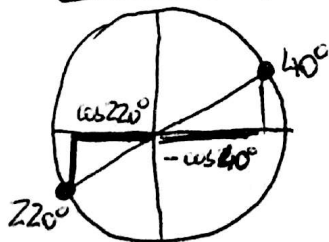


- 81 a) $\sin 123^\circ$?? $\sin 57^\circ = h$
 b) $\cos 220^\circ$?? $\tan 40^\circ = h$

a) $\boxed{\sin 123^\circ = \sin 57^\circ = h}$ (ver dibujo)



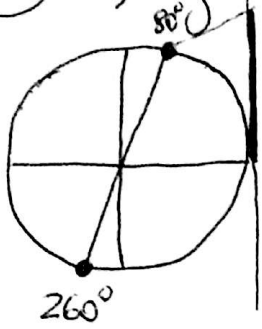
b) $\boxed{\cos 220^\circ = -\cos 40^\circ = -\frac{1}{\sqrt{1+h^2}}}$



$$1 + \tan^2 40^\circ = \sec^2 40^\circ = \frac{1}{\cos^2 40^\circ} \Rightarrow 1 + h^2 = \frac{1}{\cos^2 40^\circ} \Rightarrow$$

$$\Rightarrow \cos^2 40^\circ = \frac{1}{1+h^2} \Rightarrow \cos 40^\circ = +\sqrt{\frac{1}{1+h^2}} = \frac{1}{\sqrt{1+h^2}}$$

81) c) $\text{tg } 260^\circ ?? \text{ sen } 80^\circ = h$



$$\boxed{\text{tg } 260^\circ = \text{tg } 80^\circ = \frac{h}{\sqrt{1-h^2}}}$$

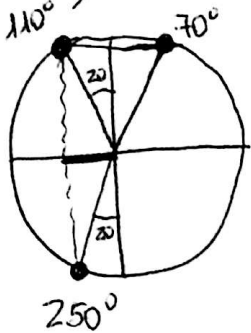
Ditujok

$$\text{tg } 80^\circ = \frac{\text{sen } 80^\circ}{\cos 80^\circ} = \frac{\text{sen } 80^\circ}{\sqrt{1-\text{sen}^2 80^\circ}} = \frac{h}{\sqrt{1-h^2}}$$

$$\text{sen}^2 80^\circ + \cos^2 80^\circ = 1$$

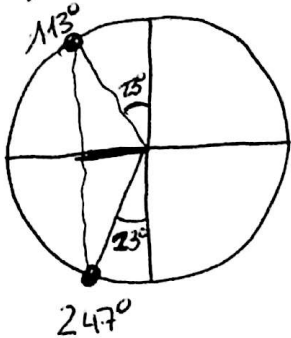
$$\cos^2 80^\circ = 1 - \text{sen}^2 80^\circ$$

d) $\cos 250^\circ ?? \text{ sen } 110^\circ = h$



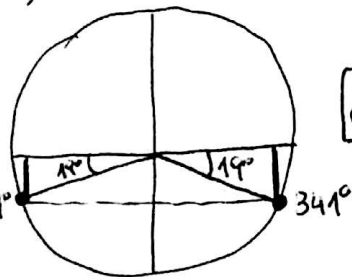
$$\boxed{\cos 250^\circ = \cos 110^\circ = -\sqrt{1-\text{sen}^2 110^\circ} = -\sqrt{1-h^2}}$$

e) $\cos 247^\circ ?? \text{ sen } 113^\circ = h$



$$\boxed{\cos 247^\circ = \cos 113^\circ = -\sqrt{1-\text{sen}^2 113^\circ} = -\sqrt{1-h^2}}$$

f) $\text{cosec } 701^\circ ?? \text{ si } \cotg 199^\circ = h$

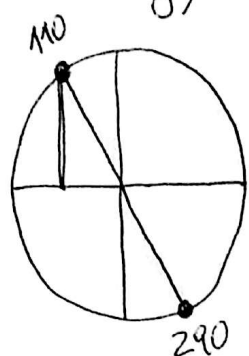


$$701^\circ = 360^\circ + 341^\circ$$

$$\boxed{\text{cosec } 701^\circ = \text{cosec } 341^\circ = \text{cosec } 199^\circ = -\sqrt{1+h^2}}$$

$$1 + \cotg^2 199^\circ = \text{cosec}^2 199^\circ$$

81



g) $\text{tg } 290^\circ \text{ ?? } \text{sen } 110^\circ = h$

$$\boxed{\text{tg } 290^\circ = \text{tg } 110^\circ = \frac{-h}{\sqrt{1-h^2}}}$$

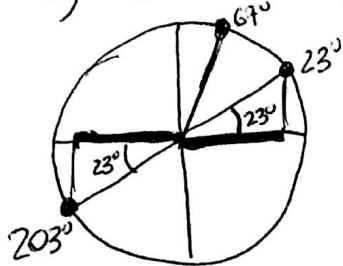
$$\text{sen } 110^\circ = h \Rightarrow \cos 110^\circ = -\sqrt{1-h^2}$$

$$\text{sen}^2 110^\circ + \cos^2 110^\circ = 1 \Rightarrow \cos^2 110^\circ = 1 - \text{sen}^2 110^\circ = 1 - h^2$$

h) $\text{sen } 83^\circ \text{ ??, siendo } \cos 7^\circ = h$

$$\boxed{\text{sen } 83^\circ = \cos 7^\circ = h} \quad (\text{angulos complementarios})$$

i) $\sec 203^\circ \text{ ?? } \cotg 67^\circ = h$



$$\boxed{\sec 203^\circ = \frac{1}{\cos 203^\circ} = -\frac{1}{\cos 23^\circ} = -\frac{1}{\text{sen } 67^\circ} = -\frac{1}{\sqrt{1+h^2}}}$$

$$1 + \cotg^2 67^\circ = \text{cosec}^2 67^\circ$$

$$1 + h^2 = \frac{1}{\text{sen}^2 67^\circ} \Rightarrow \text{sen}^2 67^\circ = \frac{1}{1+h^2} \Rightarrow \text{sen } 67^\circ = \frac{1}{\sqrt{1+h^2}}$$

(82) a) $\operatorname{cosec} \frac{23\pi}{5} \quad ?? \quad \cotg \frac{3\pi}{5} = -h^2$

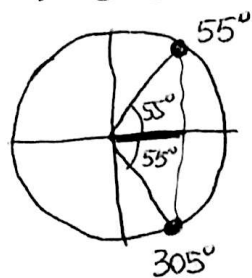
$$\frac{23\pi}{5} = 23 \cdot 36^\circ = 828^\circ = 2 \cdot 360^\circ + 108^\circ \Rightarrow \operatorname{cosec} \frac{23\pi}{5} = \operatorname{cosec} 108^\circ$$

$$\frac{3\pi}{5} = 3 \cdot 36^\circ = 108^\circ \Rightarrow \cotg 108^\circ = -h^2$$

$$\operatorname{cosec}^2 108 = 1 + \cotg^2 108^\circ = 1 + (-h^2)^2 = 1 + h^4 \Rightarrow$$

$$\Rightarrow \boxed{\operatorname{cosec} 108^\circ = +\sqrt{1+h^4}}$$

b) $\sec 305^\circ \quad ?? \quad \cotg 55^\circ = \frac{1}{h} \Rightarrow \tg 55^\circ = h$

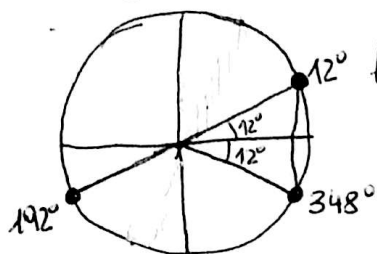


$$\boxed{\sec 305^\circ = \sec 55^\circ = +\sqrt{1+\tg^2 55^\circ} = \sqrt{1+h^2}}$$

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$$1 + \tg^2 55^\circ = \sec^2 55^\circ$$

c) $\tg 348^\circ \quad ?? \quad \cos 192^\circ = -h^2 \Rightarrow \sen 192^\circ = -\sqrt{1-h^4} \quad (\text{R.F.T})$



$$\begin{aligned} \tg 348^\circ &= -\tg 12^\circ = -\tg 192^\circ = -\frac{\sen 192^\circ}{\cos 192^\circ} = -\frac{-\sqrt{1-h^4}}{-h^2} = \\ &= -\frac{\sqrt{1-h^4}}{h^2} \end{aligned}$$