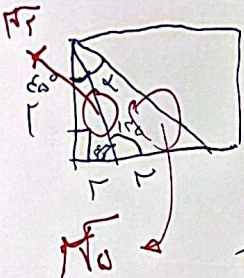
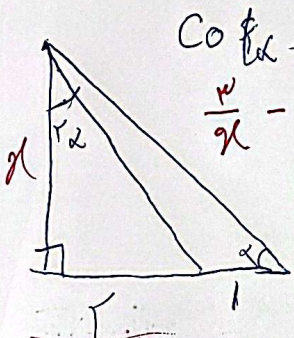


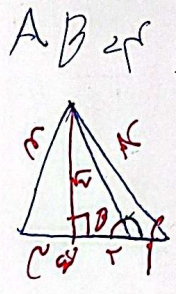
$f \ 4\sqrt{2} \sin \alpha \Rightarrow \sin(\alpha) = \frac{\sqrt{2}}{4} = \frac{\sqrt{2}}{2}$
 $\sin(\alpha) = \frac{\sqrt{2}}{2}$
 $45^\circ \leftarrow \sin \alpha = \frac{\sqrt{2}}{2}$
 دو زاویه متمم از ۱۸۰ و ۱۳۵



$\sin(\alpha + \beta) = \sin \alpha \cos \beta + \cos \alpha \sin \beta = \frac{r}{r} (\sin \alpha \cos \alpha) = \frac{\sqrt{2}}{2}$
 $\sin \alpha + \cos \alpha = \sqrt{2} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{2} \cdot \sqrt{2}}{2} = 1$
 $\tan(\alpha + \beta) = \tan(\alpha + 45^\circ) = \frac{\tan \alpha + 1}{1 - \tan \alpha} = \frac{\tan \alpha + 1}{1 - \tan \alpha} = \sqrt{2} \Rightarrow \tan \alpha = \frac{1}{\sqrt{2}}$



$\cot \alpha - \tan \alpha = \sqrt{2} \cot \alpha$
 $\frac{r}{1} - \frac{1}{r} = \sqrt{2} \frac{1}{r} \Rightarrow \frac{r}{1} = \frac{1 + \sqrt{2}}{r} \Rightarrow r^2 = 1 + \sqrt{2}$
 $\cot(\alpha) = \frac{r}{1} = \sqrt{2}$



$A, B \text{ از } r, \sin(\alpha) = \sin(\pi - \alpha) \Rightarrow \tan(\alpha) = -\tan(\beta)$
 $\tan(\beta) = \frac{1}{r} \Rightarrow \tan(\alpha) = -\frac{1}{r}$

$\sin^2 \alpha + \sin^2 \alpha + \cos^2 \alpha = \frac{r}{r} \Rightarrow \sin^2 \alpha = \frac{1}{2} \Rightarrow \sin \alpha = \frac{\sqrt{2}}{2}$
 $\tan \alpha = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1 \Rightarrow \sqrt{\frac{1}{2}} = \sqrt{\frac{1}{2}} = \frac{\sqrt{2}}{2} = \frac{\sin \alpha}{\cos \alpha} = \tan \alpha \Rightarrow \tan^2 \alpha = 1$

$$\tan \alpha + 1 = \frac{1}{\cos \alpha} \Rightarrow \frac{14}{9} + \frac{1}{2} = \frac{16}{9} \Rightarrow \cos \alpha = \frac{9}{16} \Rightarrow \cos \alpha = \frac{3}{4} \text{ و } \sin \alpha = \frac{\sqrt{7}}{4}$$

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$$\tan \alpha + 1 = \frac{1}{\cos \alpha} \Rightarrow \frac{14}{9} + \frac{1}{2} = \frac{16}{9} \Rightarrow \cos \alpha = \frac{9}{16} \Rightarrow \cos \alpha = \frac{3}{4} \text{ و } \sin \alpha = \frac{\sqrt{7}}{4}$$

که زاویه در ناحیه سوم است

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$$\sin\left(\frac{\sqrt{13}}{5} + \alpha\right) = \sin \alpha = \frac{-5}{13} \text{ و } \tan\left(\alpha - \frac{\pi}{4}\right) = \cot \alpha = \frac{-5}{12}$$

$$\cos\left(\frac{\sqrt{13}}{5} - \alpha\right) = -\sin \alpha = \frac{5}{13}$$

$$\frac{-5}{13} \times \frac{5}{13} = \frac{-25}{169} + \frac{5}{12} = \frac{11}{100}$$

$$\sqrt{r}(\sin \alpha \cos \beta) = r \sin\left(-\frac{\pi}{4}\right) = -r \times \sin\left(\frac{\pi}{4}\right) = -1$$

$$\sqrt{r} \sin\left(\alpha - \frac{\pi}{4}\right)$$

$$\cos\left(\alpha - \frac{\pi}{4}\right) \cos\left(\frac{\pi}{4}\right) = \left(\frac{1}{\sqrt{2}}\right) \times \frac{1}{\sqrt{2}} = \frac{1}{2}$$

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$$\tan\left(\frac{\pi}{4}\right) + 1 = \frac{1}{\cos\left(\frac{\pi}{4}\right)} \Rightarrow \frac{1}{1} + \frac{1}{1} = \frac{1}{\frac{1}{\sqrt{2}}} \Rightarrow \cos\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}} \Rightarrow \sin\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$$

$$\cot\left(\frac{\pi}{4}\right) \tan\left(\frac{\pi}{4}\right) = r \cot \alpha \Rightarrow r - \frac{1}{r} = \frac{16}{14} \Rightarrow \cot \alpha = \frac{16}{14} \Rightarrow \tan \alpha = \frac{7}{8}$$

$$1 + \tan \alpha = \frac{1}{\cos \alpha} \Rightarrow \cos \alpha = \frac{8}{17} \Rightarrow \sin \alpha = \frac{15}{17}$$

$$\frac{7}{8} - \frac{7}{8} = \frac{0}{8}$$

$$\frac{17 \times \sqrt{17} - 7}{17} = \frac{17 \times (\sqrt{17} - 1)}{17}$$

$$\frac{17 - 16}{\sqrt{17} \times 9} = \frac{1}{\sqrt{17} \times 9}$$

$$\frac{17}{17} = 1$$

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