

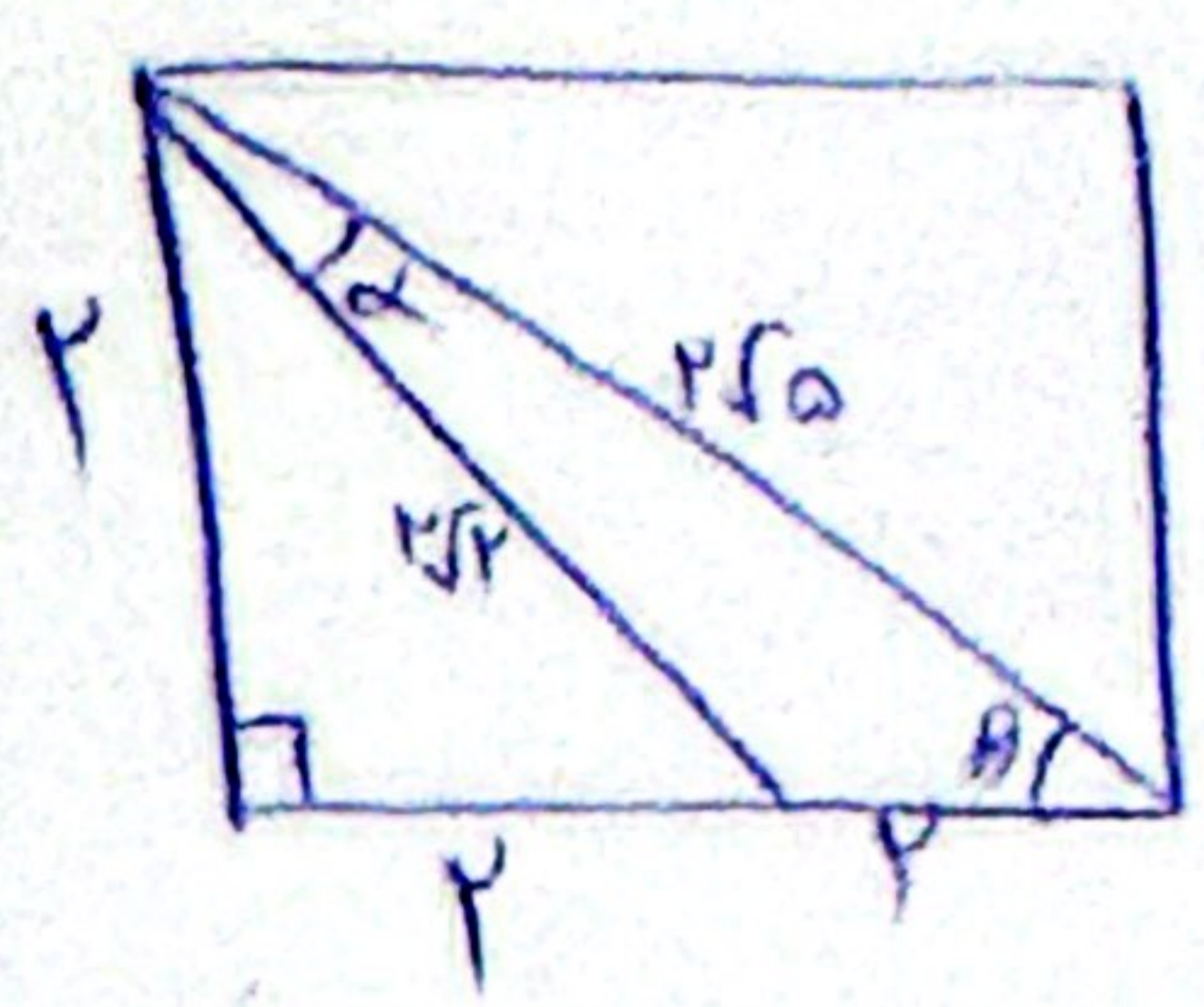
$s_{\Delta} = \frac{1}{2} \cdot \sqrt{p} \cdot \sin \alpha = \frac{1}{2} \cdot \sqrt{p} \cdot \frac{1}{\sqrt{p}}$
 $\sin \alpha = \frac{1}{\sqrt{p}}$

$\alpha_{\min} = 40^\circ$
 $\alpha_{\max} = 110^\circ$

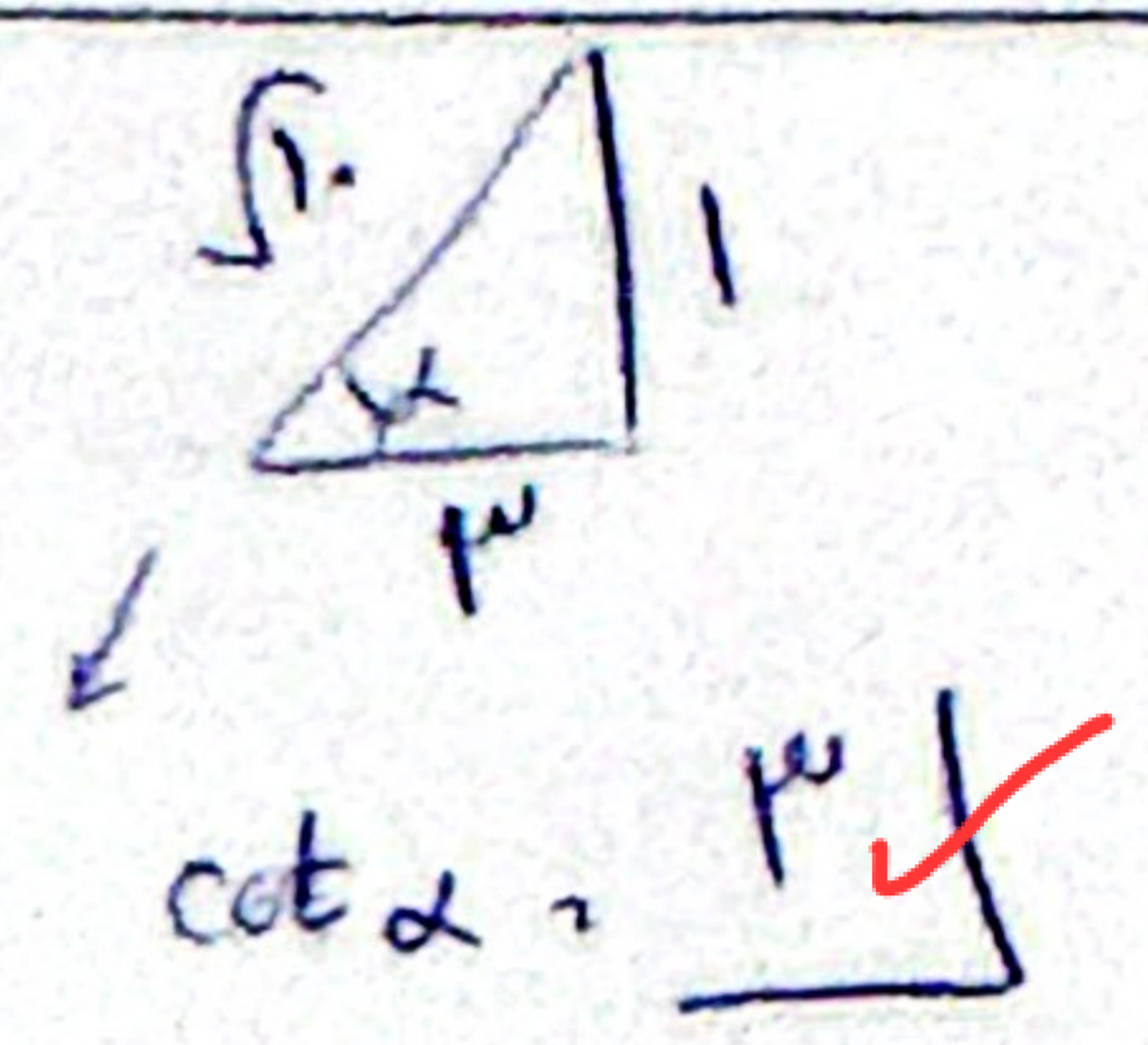
$\frac{\alpha_{\max}}{\alpha_{\min}} = \frac{110}{40} = \frac{11}{4}$ ✓

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$\frac{p}{\sin \alpha} = \frac{p \cdot \sqrt{p}}{\sin \beta} \cdot \frac{1}{\sqrt{p}}$
 $\rightarrow \sin \alpha = \frac{1}{\sqrt{p}}$

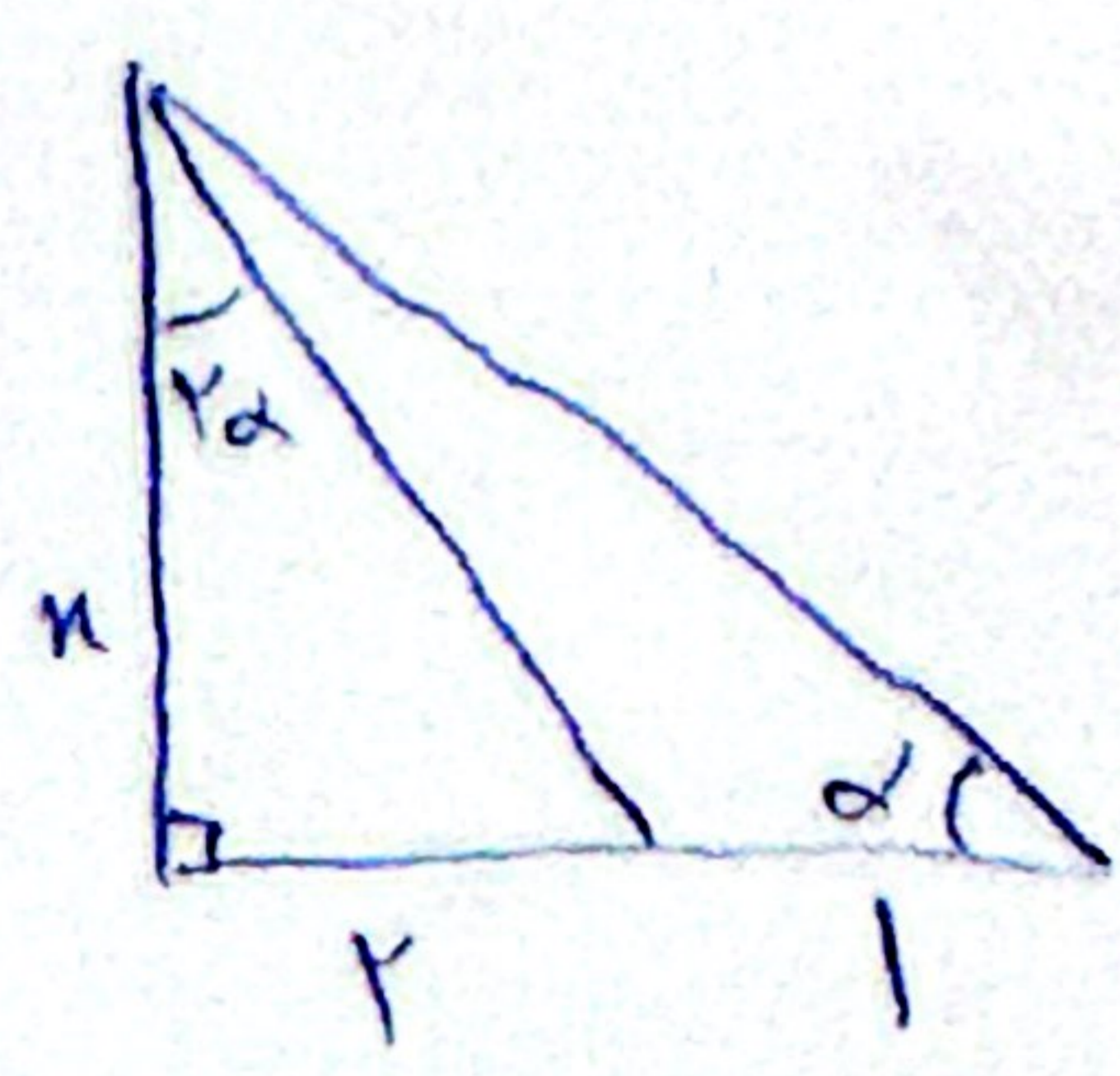


$\cot \alpha = \frac{p}{1}$ ✓

$\sin \beta = \frac{1}{\sqrt{p}}$

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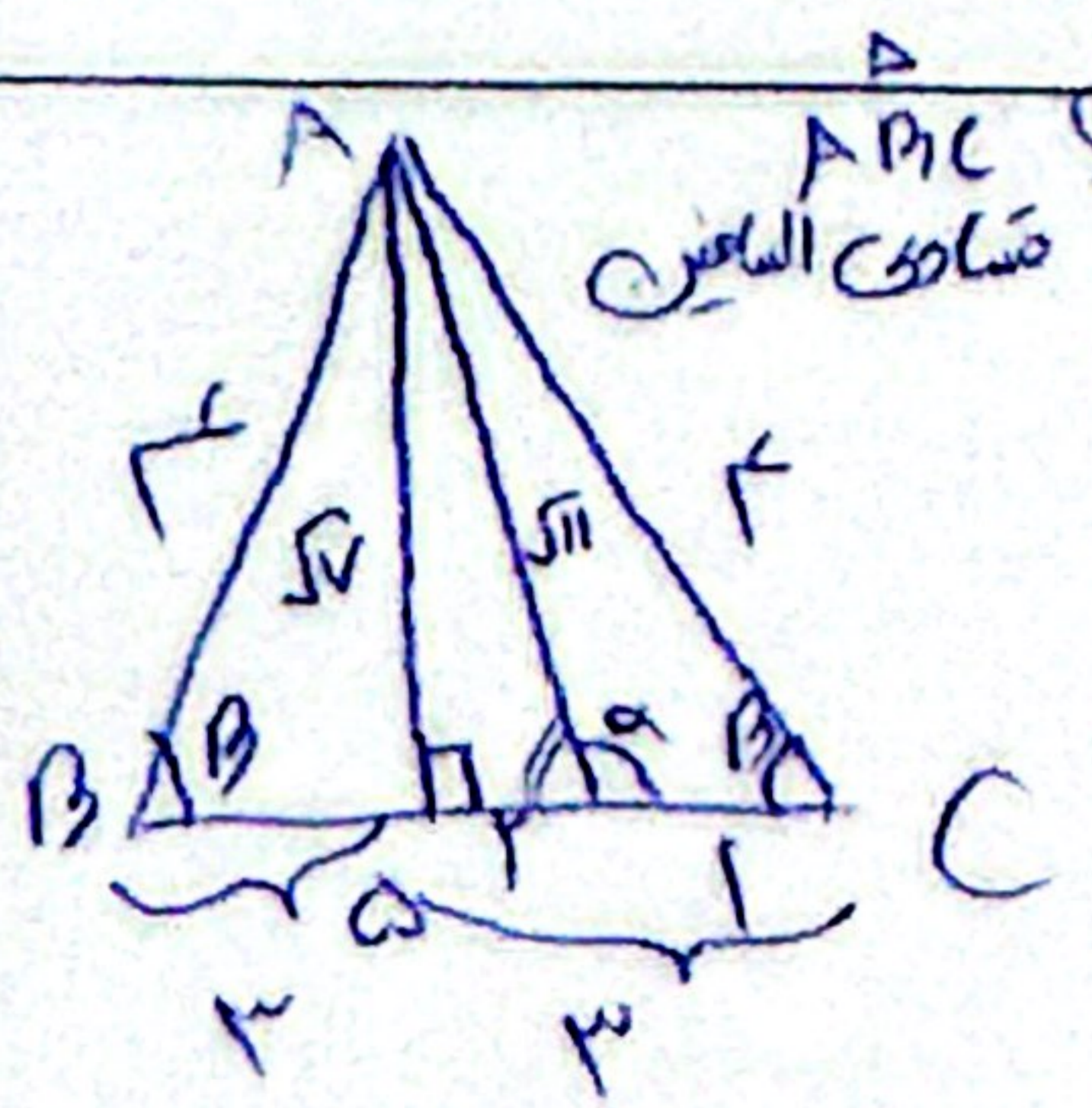
$\tan \alpha = \frac{n}{p} \rightarrow \frac{n}{p} \cdot \frac{p}{n} \rightarrow n \cdot \frac{p}{n}$
 $\tan \alpha = \frac{p}{n} \rightarrow \tan \alpha = \frac{p \cdot \tan \alpha}{1 - \tan^2 \alpha} = \frac{\frac{pn}{p}}{1 - \frac{n^2}{p^2}} = \frac{p}{n}$

$\tan \alpha = \frac{p}{n} = \frac{1}{2}$ ✓
 $\cot \alpha = 2$ ✓

$\frac{pn}{p} = 1 \rightarrow \frac{n}{p} = 1 - \frac{n^2}{p^2}$
 $\frac{pn}{p} = 1 \rightarrow n = \frac{p}{p}$ ✓

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$\tan \alpha - \alpha = \frac{\sqrt{p}}{p}$
 $\rightarrow \tan \alpha = \frac{\sqrt{p}}{p} \rightarrow \tan \alpha = \frac{\sqrt{p}}{p}$ ✓

دقت!

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$p \sin^2 \alpha + \cos^2 \alpha = \frac{p}{p}$
 $\rightarrow \sin^2 \alpha = \frac{1}{p} \rightarrow \cos^2 \alpha = \frac{p}{p} \rightarrow 1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} \rightarrow \tan^2 \alpha = \frac{1}{p}$ ✓

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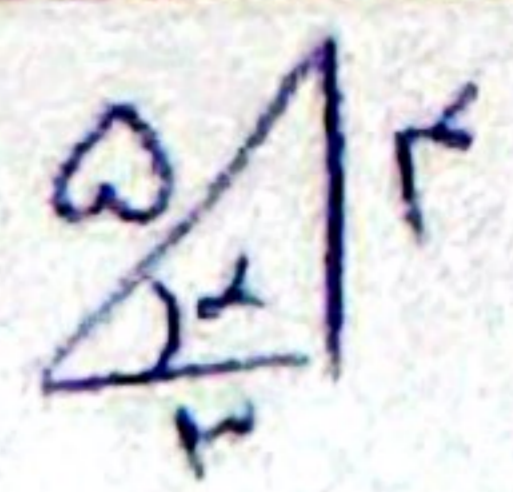
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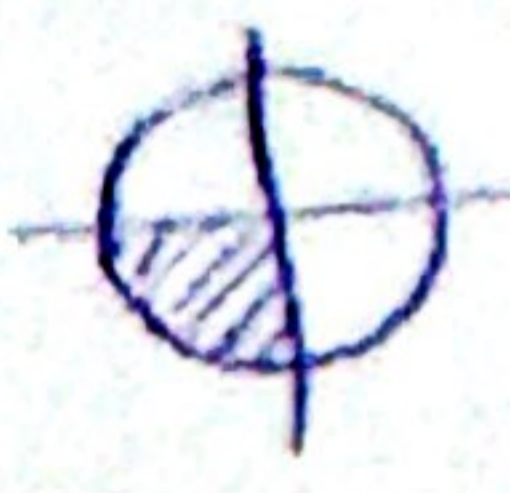
$$\frac{\sin^2 \alpha + r \cos \alpha}{1 + \cos \alpha} = \frac{\cos^2 \alpha + r \sin \alpha}{1 + \sin \alpha}$$

$$\frac{\cos^2 \alpha - \cos \alpha + 1}{(1 - \cos \alpha) + r \cos \alpha} = \frac{\sin^2 \alpha - r \sin \alpha + 1}{(1 - \sin \alpha) + r \sin \alpha}$$

$$\frac{1 + \cos \alpha}{(\cos \alpha + 1)^2} = \frac{(\sin \alpha + 1)^2}{\sin^2 \alpha + 1} = \cos^2 \alpha + 1 - 1 - \sin^2 \alpha = \cos^2 \alpha \checkmark$$

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$\tan \alpha = \frac{r}{p}$ 



$$\sin\left(\frac{\pi}{2} + \alpha\right) \cdot \cos\left(\frac{\pi}{2} - \alpha\right) - \tan\left(\alpha - \frac{\pi}{4}\right) = 2$$

$$= \cos \alpha \cdot (-\sin \alpha) + \cot \alpha$$

$$= -\frac{r}{p} \cdot \left(\frac{r}{p}\right) + \frac{p}{r} = \frac{-r^2 + p^2}{r^2} = \frac{p^2 - r^2}{r^2} = 2 \checkmark$$

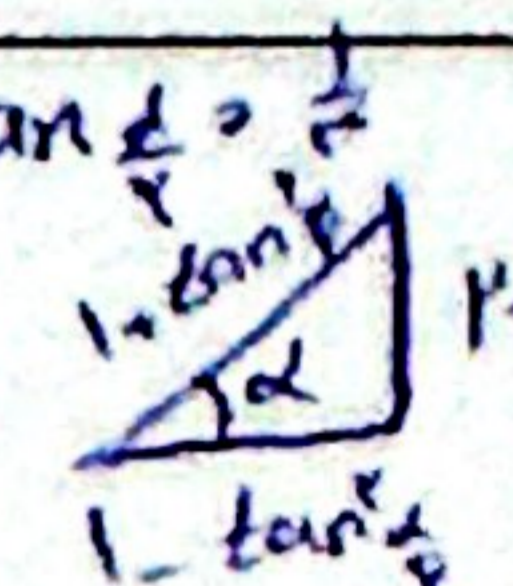
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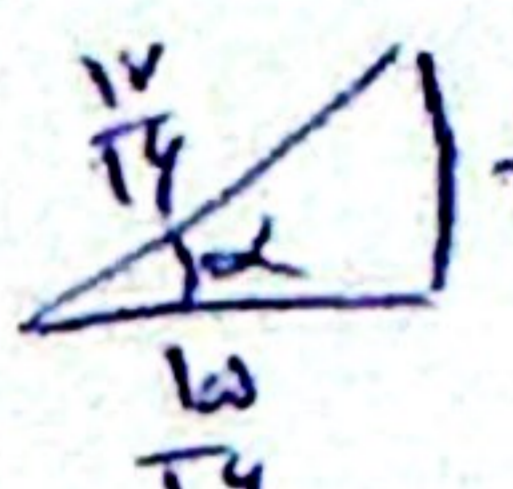
$$\left(r \cos \alpha + \sqrt{r \sin \alpha - r \cos \alpha} \right) \cdot \left(r \cos \frac{\pi}{4} + \sqrt{r \left(\sin \frac{\pi}{4} - \cos \frac{\pi}{4} \right)} \right)$$

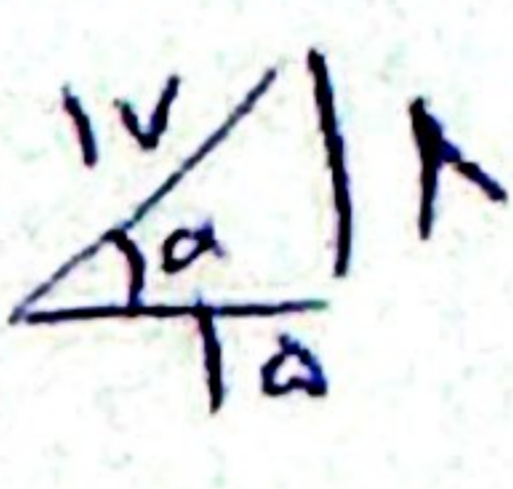
$$\left(r \cos \alpha + \sqrt{r \sin \alpha - r \cos \alpha} \right) \cdot \left(\frac{r}{\sqrt{2}} + \sqrt{\frac{r}{2} (\sin \alpha - \cos \alpha)} \right)$$

$$\frac{r}{\sqrt{2}} + \sqrt{\frac{r}{2} (\sin \alpha - \cos \alpha)} = \frac{r}{\sqrt{2}} \checkmark$$

2
1

$\tan \alpha = \frac{1}{2}$ 

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$$\frac{\tan \alpha - \sin \alpha}{\sin \alpha - \cos \alpha} = \frac{\frac{1}{2} - \frac{1}{\sqrt{5}}}{\frac{1}{\sqrt{5}} - \frac{2}{\sqrt{5}}} = \frac{\frac{\sqrt{5} - 2}{2\sqrt{5}}}{\frac{1 - 2}{\sqrt{5}}} = \frac{\sqrt{5} - 2}{2(-1)} = \frac{2 - \sqrt{5}}{2} \checkmark$$

$\tan \alpha = \frac{1}{2}$

$\alpha < \frac{\pi}{4}$

$\frac{\pi}{2} < \alpha < \frac{3\pi}{4}$

$\frac{\pi}{4} < \alpha < \frac{\pi}{2}$

$\alpha < \frac{\pi}{4}$

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$\frac{\cos \alpha}{\sin \alpha} > 0$

$\frac{\cos \alpha}{\sin \alpha} > 0$

$\cos \alpha > 0$

$r \sin \alpha < r \cos \alpha$


$\sin \alpha < \cos \alpha$

$\sin \alpha < \cos \alpha$

$\sin \alpha < \cos \alpha$

$\sin \alpha < \cos \alpha$

$\sin \alpha < \cos \alpha$



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