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$\frac{1}{2}\times\sin\alpha\times 4\times\sqrt{5} = 4$

$\sin\alpha = \frac{4}{4\sqrt{5}} = \frac{\sqrt{5}}{5}$

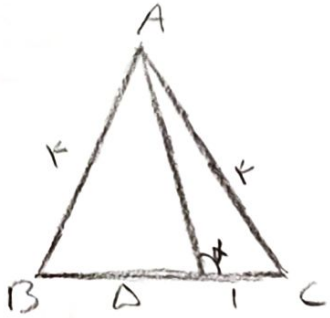
$\frac{\alpha_{max}}{\alpha_{min}} = \frac{120}{40} = 3$

$\frac{4\sqrt{5}}{\frac{\sqrt{2}}{2}} = \frac{x}{\sin\alpha}$

$\sin\alpha = \frac{\sqrt{2}}{2\sqrt{5}} = \frac{1}{\sqrt{10}}$

$\cot^2\alpha + 1 = 10$

$\boxed{\cot\alpha = 3}$



$\sin^2 x = \frac{1}{5}$

$1 + \tan^2 x = \frac{1}{\frac{2}{3}}$

$\tan^2 x = \frac{1}{2}$

$\cos^2 x = \frac{2}{3}$

$(\cos\alpha)(-\sin\alpha) - (-\cot\alpha) = (\frac{-3}{5})(+\frac{4}{5}) + \frac{3}{4} = \frac{-12}{25} + \frac{3}{4} = 0.27$

$2\cos 4\times\frac{11\pi}{12} + \sqrt{2}\left(\sin\frac{11\pi}{12} - \cos\frac{11\pi}{12}\right) = \frac{3}{2} - 1 = \frac{1}{2}$

$\sqrt{2}\sin\left(\frac{11\pi}{12} - \frac{\pi}{4}\right)$

$-\frac{1}{2}$

$\sin\alpha = \frac{2\tan\frac{\alpha}{2}}{1+\tan^2\frac{\alpha}{2}} = \frac{\frac{1}{2}}{\frac{17}{16}} = \frac{8}{17}$

$\cos\alpha = \frac{15}{17}$

$\tan\alpha = \frac{8}{15}$

$\frac{\frac{8}{15} - \frac{8}{17}}{\frac{8}{17} - \frac{15}{17}} = \frac{\frac{136-120}{15\times 17}}{\frac{-7}{17}} = \frac{-16}{15\times 7} = \frac{-16}{105}$

$2\sin\alpha < \sin 2\alpha = 2\sin\alpha\cos\alpha$

$\sin\alpha\cos\alpha > \sin\alpha$

$\sin\alpha(\cos\alpha - 1) > 0$

$\cos\alpha - 1 < 0 \Rightarrow \sin\alpha < 0$

$\frac{\cot\alpha}{\sin\alpha} > 0 \quad \frac{\cos\alpha}{\sin^2\alpha} > 0 \quad \cos\alpha > 0$ } ربع چهارم