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Софтуерно инженерство, I курс, I група.
Контролно 1

①

$$\operatorname{arctg}\left(\frac{\arccos\frac{12}{13}+2\operatorname{arctg}5}{\arcsin\frac{8}{17}+2\operatorname{arctg}4}\right)$$

$\arccos x = 2\operatorname{arctg}\left(\frac{x}{1+\sqrt{1-x^2}}\right)$

$\Rightarrow \arccos\frac{12}{13} = 2\operatorname{arctg}\left(\frac{\frac{12}{13}}{1+\sqrt{1-\frac{144}{169}}}\right)$

$\arccos x = 2\operatorname{arctg}\left(\frac{\sqrt{1-x^2}}{1+x}\right)$

$\arccos x = 2\operatorname{arctg}\left(\frac{\frac{5}{13}}{\frac{25}{13}}\right) = 2\operatorname{arctg}\frac{1}{5}$

$\arcsin x = 2\operatorname{arctg}\left(\frac{x}{1+\sqrt{1-x^2}}\right) = $ ~~2arct~~

$\arcsin\frac{8}{17} = 2\operatorname{arctg}\left(\frac{\frac{8}{17}}{\frac{32}{17}}\right) = 2\operatorname{arctg}\left(\frac{1}{4}\right)$

$\Rightarrow \operatorname{arctg}\left(\frac{2.(\operatorname{arctg}(\frac{1}{5})+2\operatorname{arctg}5)}{2.(\operatorname{arctg}(\frac{1}{4})+\operatorname{arctg}4)}\right)$

$\operatorname{arctg}\frac{1}{5} = x \Rightarrow \operatorname{tg}x = \frac{1}{5}$; $\operatorname{arctg}5 = y \Rightarrow \operatorname{tg}y = 5$

$\Rightarrow \sphericalangle x + \sphericalangle y = \frac{\pi}{2}$ ($\operatorname{tg}x = \operatorname{cotg}y$)

аналогично за знаменателя получаваме $\frac{\pi}{2}$

$\Rightarrow \operatorname{arctg}\left(\frac{\frac{\pi}{2}}{\frac{\pi}{2}}\right) = \operatorname{arctg}(1) = \frac{\pi}{4}$