

مثالها

(مثال) درستی اتحادهای شرطی زیر را بررسی کنید.

1) if $\alpha + \beta + \gamma = 0 \Rightarrow \sin \alpha + \sin \beta + \sin \gamma = -4 \sin \frac{\alpha}{2} \cdot \sin \frac{\beta}{2} \cdot \sin \frac{\gamma}{2}$

2) if $\alpha + \beta + \gamma = \frac{\pi}{2} \Rightarrow \tan \alpha \tan \beta + \tan \beta \tan \gamma + \tan \alpha \cdot \tan \gamma = 1$

3) if $\alpha + \beta + \gamma = \pi \Rightarrow \tan \alpha + \tan \beta + \tan \gamma = \tan \alpha \cdot \tan \beta \cdot \tan \gamma$

4) if $\alpha + \beta + \gamma = (2k+1)\frac{\pi}{2} \Rightarrow \tan \alpha \cdot \tan \beta + \tan \gamma \tan \beta + \tan \gamma \cdot \tan \alpha = 1$

5) if $\alpha + \beta + \gamma = (2k+1)\frac{\pi}{2} \Rightarrow \cot g \alpha + \cot g \beta + \cot g \gamma = \cot g \alpha \cdot \cot g \beta \cdot \cot g \gamma$

6) if $\alpha + \beta + \gamma = k\pi \Rightarrow \tan \alpha + \tan \beta + \tan \gamma = \tan \alpha \cdot \tan \beta \cdot \tan \gamma$

7) if $\alpha + \beta + \gamma = k\pi \Rightarrow \cot g \alpha \cdot \cot g \beta + \cot g \beta \cdot \cot g \gamma + \cot g \gamma \cdot \cot g \alpha = 1$

8)
$$\left\{ \begin{array}{l} \alpha + \beta = \frac{\pi}{4} \Rightarrow \begin{cases} \tan \alpha + \tan \beta + \tan \alpha \cdot \tan \beta = 1 \\ (1 + \tan \alpha)(1 + \tan \beta) = 2 \end{cases} \\ \alpha + \beta = \frac{3\pi}{4} \Rightarrow \begin{cases} \tan \alpha + \tan \beta - \tan \alpha \cdot \tan \beta = -1 \\ (1 - \tan \alpha)(1 - \tan \beta) = 2 \end{cases} \end{array} \right.$$

9) if $\alpha + \beta + \gamma = (2k+1)\frac{\pi}{2} \Rightarrow \tan^2 \alpha + \tan^2 \beta + \tan^2 \gamma \geq 1$

10) if $\alpha + \beta + \gamma = k\pi \Rightarrow \cot g^2 \alpha + \cot g^2 \beta + \cot g^2 \gamma \geq 1$

مثالها

مثال) درستی تساویهای زیر را بررسی کنید.

11) $\sin 2A + \sin 2B + \sin 2C = 4 \sin A \cdot \sin B \cdot \sin C$

12) $\cos 2A + \cos 2B + \cos 2C = -4 \cos A \cos B \cos C - 1$

13) $\sin A + \sin B + \sin C = 4 \cos \frac{A}{2} \cdot \cos \frac{B}{2} \cdot \cos \frac{C}{2}$

14) $\tan 55^\circ - \tan 10^\circ - \tan 55^\circ \tan 10^\circ = 1$

15) $\tan 100^\circ \tan 130^\circ + \tan 130^\circ \tan 40^\circ + \tan 100^\circ \tan 40^\circ = 1$

16) $\tan 15^\circ \cot 65^\circ + \tan 25^\circ \cot 40^\circ + \tan 50^\circ \cot 75^\circ = 1$

17) $(1 + \tan 10^\circ)(1 + \tan 35^\circ) = 2$

مثال 18) اگر $\tan a + \tan 2a = \tan 3a$ باشد مقدار $\tan a \cdot \tan 2a \cdot \tan 3a$ چقدر است .