

4.14 Transforming of Trigonometric Expressions to Product

$$434. \quad \sin \alpha + \sin \beta = 2 \sin \frac{\alpha + \beta}{2} \cos \frac{\alpha - \beta}{2}$$

$$435. \quad \sin \alpha - \sin \beta = 2 \cos \frac{\alpha + \beta}{2} \sin \frac{\alpha - \beta}{2}$$

$$436. \quad \cos \alpha + \cos \beta = 2 \cos \frac{\alpha + \beta}{2} \cos \frac{\alpha - \beta}{2}$$

$$437. \quad \cos \alpha - \cos \beta = -2 \sin \frac{\alpha + \beta}{2} \sin \frac{\alpha - \beta}{2}$$

$$438. \quad \tan \alpha + \tan \beta = \frac{\sin(\alpha + \beta)}{\cos \alpha \cdot \cos \beta}$$

$$439. \quad \tan \alpha - \tan \beta = \frac{\sin(\alpha - \beta)}{\cos \alpha \cdot \cos \beta}$$

$$440. \quad \cot \alpha + \cot \beta = \frac{\sin(\beta + \alpha)}{\sin \alpha \cdot \sin \beta}$$

$$441. \quad \cot \alpha - \cot \beta = \frac{\sin(\beta - \alpha)}{\sin \alpha \cdot \sin \beta}$$

$$442. \quad \cos \alpha + \sin \alpha = \sqrt{2} \cos \left(\frac{\pi}{4} - \alpha \right) = \sqrt{2} \sin \left(\frac{\pi}{4} + \alpha \right)$$

$$443. \quad \cos \alpha - \sin \alpha = \sqrt{2} \sin \left(\frac{\pi}{4} - \alpha \right) = \sqrt{2} \cos \left(\frac{\pi}{4} + \alpha \right)$$

$$444. \quad \tan \alpha + \cot \beta = \frac{\cos(\alpha - \beta)}{\cos \alpha \cdot \sin \beta}$$

$$445. \quad \tan \alpha - \cot \beta = -\frac{\cos(\alpha + \beta)}{\cos \alpha \cdot \sin \beta}$$

$$446. \quad 1 + \cos \alpha = 2 \cos^2 \frac{\alpha}{2}$$

$$447. \quad 1 - \cos \alpha = 2 \sin^2 \frac{\alpha}{2}$$

$$448. \quad 1 + \sin \alpha = 2 \cos^2 \left(\frac{\pi}{4} - \frac{\alpha}{2} \right)$$

$$449. \quad 1 - \sin \alpha = 2 \sin^2 \left(\frac{\pi}{4} - \frac{\alpha}{2} \right)$$