4.14 Transforming of Trigonometric Expressions to Product

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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