

No Joking Around Trigonometric Identities Sum and Difference Formulas

Prove each identity.

1. $\sin(\pi + \Theta) = -\sin\Theta$

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

3. $\cos\alpha\cos\beta(\tan\alpha + \tan\beta) = \sin(\alpha + \beta)$

4. $2\sin\alpha\cos\beta = \sin(\alpha - \beta) + \sin(\alpha + \beta)$

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Prove each identity.

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

2. $\sin(\alpha + \beta) + \sin(\alpha - \beta) = 2\sin\alpha\cos\beta$

3. $\cos(\alpha + \beta) + \cos(\alpha - \beta) = 2\cos\alpha\cos\beta$

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

5. $\sin(\alpha + \beta)\sin(\alpha - \beta) = \sin^2\alpha - \sin^2\beta$