Trigonometry function

1. Prove $\dfrac{\sin(A-B)}{\sin(A+B)} = \dfrac{\cot B - \cot A}{\cot B + \cot A}$

2. Prove $cosec\, 2\theta + \cot 2\,\theta = \cot\theta$

3. Prove $\dfrac{\cos\theta + \sin\theta}{\cos\theta - \sin\theta} = \dfrac{1 + \sin 2\theta}{\cos 2\theta}$

4. Show that $cosec^2\dfrac{\theta}{2} + sec^2\dfrac{\theta}{2} = 4cosec^2\theta$, deduce the value of

$$cosec^2\dfrac{\pi}{12} + sec^2\dfrac{\pi}{12}$$

5. Prove $\sin 12A + 8\sin A - \sin 4A = 4\cos 2A \sin 4A \cos 6A$

6. Prove $2\sin 3x \cos 2x = \sin 5\,x + \sin x$

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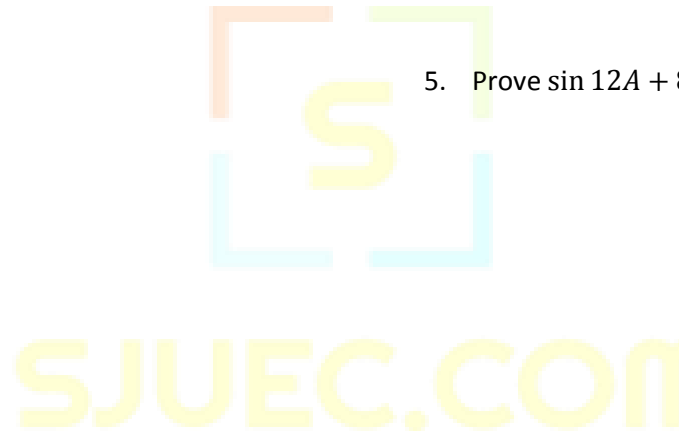
Trigonometry function

7. Prove $10 \cos 7\theta \sin 2\theta = 5(\sin 9\theta - \sin 5\theta)$

10. Show $\dfrac{\sin 8\theta \cos \theta - \sin 6\theta \cos 3\theta}{\cos 2\theta \cos \theta - \sin 4\theta \sin 3\theta} = \tan 2\theta$
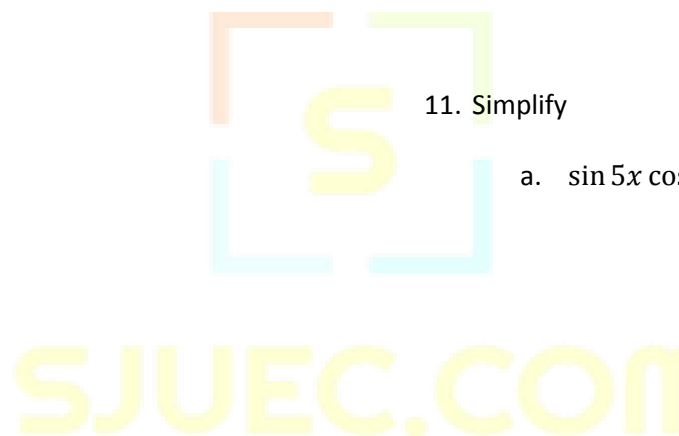
8. Prove $6 \cos 8A \cos 4A = 3 (\cos 12A + \cos 4A)$

11. Simplify

    a. $\sin 5x \cos 2x + \cos 5x \sin 2x$

    b. $\cos 3x \cos x - \sin 3x \sin x$

9. Prove $\sin 5P \sin P = -\dfrac{1}{2}(\cos 6P - \cos 4P)$
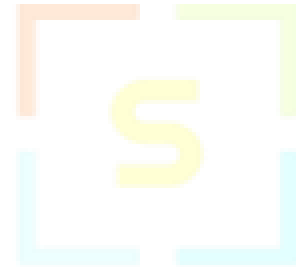
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Trigonometry function

c. $\dfrac{\tan 6x - \tan 5x}{1 + \tan 6x \tan 5x}$

f. $4 - 8\sin^2 4y$

d. $\dfrac{1 - \tan x \tan 2x}{\tan x + \tan 2x}$

g. $6\sin 3x \cos 3x$

e. $\cos^2 5x - \sin^2 5x$

h. $\dfrac{\tan 7\theta}{2(1 - \tan^2 7\theta)}$

Trigonometry function

i. $2 \cos 3x \cos 2x$

l. $4 \sin 7y \sin 4y$

j. $8 \sin 5\theta \cos \theta$

12. Show that $\frac{1-\cos 6x}{\sin 6x} = \tan 3x$

13. Prove

k. $-12 \cos 4\theta \sin 2\theta$

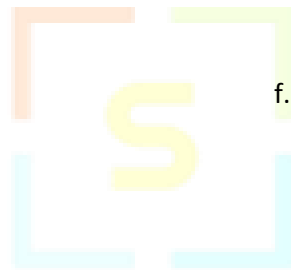a. $(\sin A + \cos A)(\cos B - \sin B) = \sin(A - B) + \cos(A + B)$

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Trigonometry function

b. $\dfrac{\cos(A-B)}{\sin A \cos B} = \dfrac{1+\tan A \tan B}{\tan A}$

e. $\tan\theta + \cot\theta = 2\,cosec\,2\theta$

c. $\tan(A+45°)\tan(A-45°) = -1$

f. $(cot^2\theta - tan^2\theta)sin^2 2\theta = 4cos^2 2\theta$

d. $\cot(A+B) = \dfrac{\cot B - \tan A}{1+\tan A \cot B}$

g. $\dfrac{2+sin^2\theta}{2-sin^2\theta} = \dfrac{5-cos2\theta}{3+cos2\theta}$

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Trigonometry function

h. $\dfrac{(1+\tan\theta)^2}{1+\tan^2\theta} = 1 + \sin 2\theta$

k. $\cos 5A + \cos A + 2\cos 3A = 4\cos 3A\,\cos^2 A$

l. $\sin 10A + 6\sin A - \sin 4A = 4\cos 2A\,\sin 3A\cos 5A$

i. $\cot\dfrac{A}{2} - \tan\dfrac{A}{2} = 2\cot A$

j. $\sec A + \tan A = \dfrac{\cos\frac{A}{2}+\sin\frac{A}{2}}{\cos\frac{A}{2}-\sin\frac{A}{2}}$

m. $\dfrac{\sin 7A - \sin 5A + \sin 3A - \sin A}{\cos A - \cos 3A + \cos 5A - \cos 7A} = \cot 4A$

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