Sum-Difference & Multiple Angle Formulas



PreCalculus
Sum-Difference & Multiple Angles Formulas

Name_____
Date _____ Period____

Simplify each expression by writing it in terms of the sine or cosine of one angle.

1. $\sin 30° \cos 45° + \cos 30° \sin 45°$
2. $\cos 30° \cos$
3. $\sin\frac{\pi}{4}\cos\frac{2\pi}{3} - \cos\frac{\pi}{4}\sin\frac{2\pi}{3}$
4. $\cos\frac{7\pi}{6}$ co

Use the sum and difference identities for sine, cosine, and tan each trigonometric function.

5. $\cos 75°$
6. $\cos 195$
7. $\cos\left(\frac{5\pi}{3}+\frac{\pi}{4}\right)$
8. $\cos$
9. $\sin 75°$
10. $\sin$
11. $\sin\left(\frac{\pi}{3}+\frac{\pi}{4}\right)$
12.
13. $\tan 255°$
14.
15. $\tan\left(\frac{5\pi}{3}+\frac{\pi}{4}\right)$

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True or False.

17. $\cos 2(35°) = 1 - 2\sin^2 35°$
18. $\cos 2(30°) = 2\cos^2 60° - 1$
19. $\sin(-40°) = 2\sin(-20°)\cos(-20°)$
20. $\sin 2(36°) = 2\sin 72°\cos 72°$
21. $\tan 2(35°) = \frac{2\tan 70°}{1-\tan^2 35°}$
22. $\tan(-70°) = \frac{2\tan(-35°)}{1-\tan^2(-35°)}$

Use double-angle identities to find the exact value of each trigonometric function.

23. Find $\sin 2\alpha$, if $\cos\alpha = \frac{4}{5}$ and $\frac{3\pi}{2} < \alpha < 2\pi$
24. Find $\cos 2\theta$, if $\sin\theta = \frac{3}{5}$ and $\frac{\pi}{2} < \theta < \pi$
25. Find $\tan 2u$, if $\cos u = \frac{5}{13}$ and $\frac{3\pi}{2} < u < 2\pi$

Use half-angle identities to find exact value of each function. Assume $0 < \theta < 2\pi$

26. Find $\cos\frac{\theta}{2}$, if $\cos\theta = \frac{4}{5}$ and θ lies in quadrant I
27. Find $\tan\frac{\alpha}{2}$, if $\tan\alpha = -2$ and α lies in quadrant II
28. Find $\sin\frac{u}{2}$, if $\cos u = \frac{\sqrt{2}}{2}$ and u lies in quadrant I

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2. $\cos 30° \cos 45° - \sin 30° \sin 45°$
3. $\sin\frac{\pi}{4}\cos\frac{2\pi}{3} - \cos\frac{\pi}{4}\sin\frac{2\pi}{3}$
4. $\cos\frac{7\pi}{6}\cos\frac{\pi}{3} + \sin\frac{7\pi}{6}\sin\frac{\pi}{3}$

Use the sum and difference identities for sine, cosine, and tangent to find the exact value of each trigonometric function.

5. $\cos 75°$
6. $\cos 195°$

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True or False.

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SUM-DIFFERENCE & MULTIPLE ANGLE FORMULAS PRACTICE

OBJECTIVE:

This is a free homework assignment from my unit on ***Analytic Trigonometry*** for students enrolled in PreCalculus.

You may be interested in purchasing the Activities & Assessments Bundle for the Unit.

Please visit my store for more engaging task card activities.

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PreCalculus Name_____

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2. $\cos 30° \cos 45° - \sin 30° \sin 45°$

3. $\sin\frac{\pi}{4}\cos\frac{2\pi}{3} - \cos\frac{\pi}{4}\sin\frac{2\pi}{3}$

4. $\cos\frac{7\pi}{6}\cos\frac{\pi}{3} + \sin\frac{7\pi}{6}\sin\frac{\pi}{3}$

Use the sum and difference identities for sine, cosine, and tangent to find the exact value of each trigonometric function.

5. $\cos 75°$

6. $\cos 195°$

7. $\cos\left(\frac{5\pi}{3} + \frac{\pi}{4}\right)$

8. $\cos\left(\frac{7\pi}{6} + \frac{\pi}{4}\right)$

9. $sin\ 75°$

10. $sin\ 195°$

11. $\sin\left(\frac{\pi}{3} + \frac{\pi}{4}\right)$

12. $\sin\left(\frac{\pi}{4} + \frac{4\pi}{3}\right)$

13. $tan\ 255°$

14. $tan\ 105°$

15. $\tan\left(\frac{5\pi}{3} + \frac{\pi}{4}\right)$

16. $\tan\left(\frac{4\pi}{3} + \frac{3\pi}{4}\right)$

True or False.

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