

Sum & Difference Identities – Mixed WS

Use the sum and difference identities to find the exact values of each function.

10. (a) $\sin 15^\circ$

(b) $\cos 15^\circ$

(c) $\tan 15^\circ$

16. (a) $\sin \frac{17\pi}{12}$

(b) $\cos \frac{17\pi}{12}$

(c) $\tan \frac{17\pi}{12}$

Use the sum and difference identities to rewrite each expression as the sine, cosine, or tangent of an angle.

19. $\cos 40^\circ \cos 15^\circ - \sin 40^\circ \sin 15^\circ$

20. $\sin 110^\circ \cos 80^\circ + \cos 110^\circ \sin 80^\circ$

21. $\sin 340^\circ \cos 50^\circ - \cos 340^\circ \sin 50^\circ$

22. $\cos 20^\circ \cos 30^\circ + \sin 20^\circ \sin 30^\circ$

23. $\frac{\tan 325^\circ - \tan 86^\circ}{1 + \tan 325^\circ \tan 86^\circ}$

24. $\frac{\tan 140^\circ - \tan 60^\circ}{1 + \tan 140^\circ \tan 60^\circ}$

27. $\cos \frac{\pi}{7} \cos \frac{\pi}{5} - \sin \frac{\pi}{7} \sin \frac{\pi}{5}$

28. $\sin \frac{2\pi}{9} \cos \frac{\pi}{10} + \cos \frac{2\pi}{9} \sin \frac{\pi}{10}$

Find the exact value of each trigonometric function given that

$$\sin u = \frac{7}{25}, \quad \frac{\pi}{2} < u < \pi \quad \text{and} \quad \cos v = \frac{4}{5}, \quad \frac{3\pi}{2} < v < 2\pi$$

39. $\cos(u + v)$

40. $\sin(u + v)$

41. $\sin(v - u)$

42. $\cos(u - v)$

• $\tan(u + v)$

• $\tan(u - v)$