

Write out the sum or difference identities

$$\sin(u + v) = \underline{\hspace{10em}}$$

$$\sin(u - v) = \underline{\hspace{10em}}$$

$$\cos(u + v) = \underline{\hspace{10em}}$$

$$\cos(u - v) = \underline{\hspace{10em}}$$

$$\tan(u + v) = \underline{\hspace{10em}}$$

$$\tan(u - v) = \underline{\hspace{10em}}$$

Express the angle as a sum or difference of 2 special angles.

1.  $15^\circ$

2.  $75^\circ$

3.  $120^\circ$

4.  $105^\circ$

Use the sum or difference identity to find an exact value.

5.  $\tan 15^\circ$

6.  $\sin 75^\circ$

7.  $\cos 75^\circ$

8.  $\sin 135^\circ$

9.  $\sin 105^\circ$

10.  $\tan 105^\circ$

11.  $\cos 15^\circ$

12.  $\tan 120^\circ$

Write as a function of one angle.

13.  $\sin 40^\circ \cos 30^\circ + \cos 40^\circ \sin 30^\circ$

14.  $\cos 15^\circ \cos 25^\circ - \sin 15^\circ \sin 25^\circ$

15.  $\sin 50^\circ \cos 10^\circ - \cos 50^\circ \sin 10^\circ$

16.  $\frac{\tan 19^\circ + \tan 47^\circ}{1 - \tan 19^\circ \cdot \tan 47^\circ}$

17.  $\cos 38^\circ \cos 37^\circ + \sin 38^\circ \sin 37^\circ$

18.  $\frac{\tan 7^\circ + \tan 18^\circ}{1 - \tan 7^\circ \cdot \tan 18^\circ}$

Prove the identity:

19.  $\sin(x - 90) = -\cos x$

20.  $\cos(x - 90) = \sin x$

21.  $\tan(\theta + 45^\circ) = \frac{1 + \tan \theta}{1 - \tan \theta}$

22.  $\cos(x - y) + \cos(x + y) = 2 \cos x \cos y$