Precalculus Name: _____

Sum and Difference Formulas

$$\sin(u \pm v) = \sin u \cos v \pm \cos u \sin v$$

$$\cos(u \pm v) = \cos u \cos v \mp \sin u \sin v$$

$$\tan(u \pm v) = \frac{\tan u \pm \tan v}{1 \mp \tan u \tan v}$$

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

1. $\sin 15^o$

2. $\tan 15^o$

3. $\sin 75^o$

4. $\cos 75^o$

5. $\cos \frac{\pi}{12}$

6. $\sin \frac{7\pi}{12}$

7. $\tan \frac{5\pi}{12}$

8. $\tan \frac{11\pi}{12}$

9. $\cos \frac{7\pi}{12}$

10. $\sin \frac{-\pi}{12}$

Write the expression as the sine, cosine, or tangent of an angle

11. $\sin 42^o \cos 17^o - \cos 42^o \sin 17^o$

12. $\cos 94^o \cos 18^o + \sin 94^o \sin 18^o$

13. $\sin\frac{\pi}{5}\cos\frac{\pi}{2} + \sin\frac{\pi}{2}\cos\frac{\pi}{5}$

14. $\sin\frac{\pi}{3}\cos\frac{\pi}{7} - \cos\frac{\pi}{3}\sin\frac{\pi}{7}$

15. $\dfrac{\tan 19^o + \tan 47^o}{1 - \tan 19^o \tan 47^o}$

16. $\dfrac{\tan\frac{\pi}{5} - \tan\frac{\pi}{3}}{1 + \tan\frac{\pi}{5}\tan\frac{\pi}{3}}$

17. $\cos x \cos\frac{\pi}{7} + \sin x \sin\frac{\pi}{7}$

18. $\cos x \cos\frac{\pi}{7} - \sin x \sin\frac{\pi}{7}$

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

20. $\cos 7y \cos 3y - \sin 7y \sin 3y$

21. $\dfrac{\tan 2y + \tan 3x}{1 - \tan 2y \bullet \tan 3x}$

22. $\dfrac{\tan 3\alpha - \tan 2\beta}{1 + \tan 3\alpha \bullet \tan 2\beta}$