

Show all supporting work. All answers must be **exact**, but you may use calculator to check.

Sum and difference formulas:

(Hint: $105^\circ = 60^\circ + 45^\circ$)

1. $\sin 105^\circ =$

$\cos 105^\circ =$

$\tan 105^\circ =$

(Hint: $225^\circ = 300^\circ - 45^\circ$)

2. $\sin 225^\circ =$

$\cos 225^\circ =$

$\tan 225^\circ =$

3. $\cos 32^\circ \cos 15^\circ - \sin 32^\circ \sin 15^\circ =$

4. $\frac{\tan 212^\circ - \tan 84^\circ}{1 + \tan 212^\circ \tan 84^\circ} =$

5. (Hint: $\frac{17\pi}{12} = \frac{7\pi}{6} + \frac{\pi}{4}$)

$\sin \frac{17\pi}{12} =$

$\cos \frac{17\pi}{12} =$

$\tan \frac{17\pi}{12} =$

6. $\sin 5\theta \cos 4\theta - \cos 5\theta \sin 4\theta =$

7. Verify: $\sin(3\pi - x) = \sin x$

Double Angles:

8. Solve: $\cos 2x + \sin x = 0$

9. Solve: $\sin 2x + \cos x = 0$

10. Given: $\cos \theta = -\frac{2}{3}$, and $\frac{\pi}{2} < x < \pi$

Find: $\sin 2\theta$

$\cos 2\theta$

Half Angles:

(Hint: $165^\circ = \frac{330^\circ}{2}$)

11. $\sin 165^\circ =$

$\cos 165^\circ =$

(Hint: $22.5^\circ = \frac{45^\circ}{2}$)

12. $\sin 22.5^\circ =$

$\cos 22.5^\circ =$

(Hint: $\frac{\pi}{12} = \frac{\left(\frac{\pi}{6}\right)}{2}$)

13. $\sin \frac{\pi}{12} =$

$\cos \frac{\pi}{12} =$