

Use a sum or difference identity to find exact values, in simplest form:

1.  $\sin 105^\circ$                       2.  $\cos 165^\circ$                       3.  $\tan 15^\circ$

Simplify to a trig function of a single angle and find the exact value, in simplest form.

4.  $\frac{\tan \frac{2\pi}{3} + \tan \frac{7\pi}{6}}{1 - \tan \frac{2\pi}{3} \tan \frac{7\pi}{6}}$                       5.  $\cos 160^\circ \cos 50^\circ - \sin 160^\circ \sin 50^\circ$

6.  $\sin 285^\circ \cos 15^\circ - \cos 285^\circ \sin 15^\circ$

Given that  $\sin A = \frac{4}{5}$ , where  $0 \leq A \leq \frac{\pi}{2}$  and  $\tan B = \frac{-5}{12}$ , where  $\frac{-\pi}{2} < B \leq 0$ .

Find exact values, in simplest form.

7.  $\sin(A - B)$     8.  $\cos(A + B)$     9.  $\tan(A + B)$     10.  $\cot A$     11.  $\sec B$

12. Simplify to a single trig function:  $\frac{\tan x + \cot x}{\csc^2 x}$

13. Solve for  $x$ , if  $0 \leq x < 2\pi$ :  $\tan(x + \pi) + \cos\left(x - \frac{\pi}{2}\right) = 0$

14. Prove the identity:  $\sin\left(\frac{\pi}{6} + x\right) + \sin\left(\frac{\pi}{6} - x\right) \equiv \cos x$

Answers: 1.  $\frac{\sqrt{6} + \sqrt{2}}{4}$     2.  $\frac{-\sqrt{6} - \sqrt{2}}{4}$     3.  $2 - \sqrt{3}$     4.  $\tan \frac{11\pi}{6}; \frac{-\sqrt{3}}{3}$

5.  $\cos 210^\circ; \frac{-\sqrt{3}}{2}$     6.  $\sin 270^\circ; -1$     7.  $\frac{63}{65}$     8.  $\frac{56}{65}$     9.  $\frac{33}{56}$

10.  $\frac{3}{4}$     11.  $\frac{13}{12}$     12.  $\tan x$     13.  $0, \pi$