

**Day #76 Homework**

For problems 1 – 4, use a sum or difference identity to find the exact value of each expression.

<p>1. Find the exact value of <math>\sin(-15^\circ)</math>.</p>	<p>2. Find the exact value of <math>\sin\left(\frac{11\pi}{12}\right)</math></p>
<p>3. Find the exact value of <math>\cos(-105^\circ)</math>.</p>	<p>4. Find the exact value of <math>\cos 75^\circ</math></p>

For problems 5 – 9, suppose  $\cos \alpha = -\frac{3}{5}$  and  $\cos \beta = -\frac{15}{17}$ . Additionally,  $\frac{\pi}{2} < \alpha < \pi$  and  $\pi < \beta < \frac{3\pi}{2}$ .

<p>5. Draw and label the reference triangle for <math>\alpha</math>.</p>	<p>6. Draw and label the reference triangle for <math>\beta</math>.</p>
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7. Find the value of $\sin(\beta - \alpha)$ .	8. Find the value of $\cos(\alpha - \beta)$ .
9. Find the value of $\tan(\alpha + \beta)$ .	

Simplify each of the following expressions using a sum or difference identity. Show your work providing exact values, when applicable. (NO CALCULATOR)

10. $\sin\left(x + \frac{\pi}{2}\right)$	11. $\cos \frac{11\pi}{9} \cos \frac{2\pi}{9} + \sin \frac{11\pi}{9} \sin \frac{2\pi}{9}$
12. $\cos\left(\frac{\pi}{20}\right)\cos\left(\frac{\pi}{5}\right) - \sin\left(\frac{\pi}{20}\right)\sin\left(\frac{\pi}{5}\right)$	13. $\sin 400^\circ \cos 85^\circ - \cos 400^\circ \sin 85^\circ$
14. $\frac{\tan\left(\frac{11\pi}{21}\right) + \tan\left(\frac{\pi}{7}\right)}{1 - \tan\left(\frac{11\pi}{21}\right)\tan\left(\frac{\pi}{7}\right)}$	15. $\sin(\pi + x) + \sin(\pi - x)$