

Math 142 Fall 2009 Practice Exam 2

1. Find the exact value of $\cos 50^\circ \cos 5^\circ + \sin 50^\circ \sin 5^\circ$.
2. Evaluate $\tan \left[\cos^{-1} \left(\frac{\sqrt{5}}{4} \right) \right]$.
3. Find the value of $\cos 2\theta$ if $\cos \theta = \frac{\sqrt{2}}{\sqrt{3}}$.
4. Find the exact value of $\tan(-15^\circ)$.
5. Find all the solutions to $\tan \theta = -1$.
6. Does $\sin \left(\frac{3\pi}{2} + \theta \right) = \sin \theta$?
7. If $\sin \left(\frac{\theta}{3} \right) = \frac{\sqrt{2}}{2}$ and $\frac{\pi}{2} \leq \theta \leq \pi$, what is θ ?
8. What is $\tan^{-1} \left(\frac{1}{\sqrt{3}} \right)$?
9. Simplify to a single expression: $1 - \frac{\sin^2 \theta}{1 - \cos \theta}$.
10. Find the exact value of $\sin \left[2 \cos^{-1} \left(\frac{1}{3} \right) \right]$.
11. Show that $\tan \left(\theta + \frac{\pi}{4} \right) = \frac{\cos \theta + \sin \theta}{\cos \theta - \sin \theta}$.
12. Solve: $\sin \theta \cos \theta + \sin \theta - \cos \theta - 1 = 0$.
13. Solve: $\sin \left(3x + \frac{\pi}{5} \right) = \frac{1}{\sqrt{2}}$.
14. Prove: $\sin 3\theta = 3 \sin \theta - 4 \sin^3 \theta$.
15. Solve each triangle. Round answers to 1 decimal point.
 - (a) $A = 43^\circ$, $B = 72^\circ$, $b = 12$.
 - (b) $A = 30^\circ$, $a = 1$, $b = 3$.
 - (c) $a = 6$, $b = 8$, $C = 46^\circ$.