

Name: _____

Period: _____

**Advanced Math
Problem Solving #2
Due Friday April 23rd**

1. Determine the exact value of $\cos(-15^\circ)$.
2. Determine the sum of the infinite geometric series $4, 2, 1, \frac{1}{2}, \dots$
3. A wheel on Brian's truck has a radius of 14 inches and revolves 4 times per second. Determine the speed of the truck in miles per hour.
4. Find the product of $3(\cos 30^\circ + i \cdot \sin 30^\circ) \cdot 2(\cos 150^\circ + i \cdot \sin 150^\circ)$

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5. Verify that the equation $\frac{\cos \theta}{1 - \sin \theta} = \frac{1 + \sin \theta}{\cos \theta}$ is true.

6. Solve the equation $4^{x+3} = 5^x$. Round your answer to the nearest hundredth.

7. Radium 226 decays with a half life of 1622 years. How long will it take for a 2.3 gram sample to decay to 1.7 grams?