Find the following limit:

\[
\lim_{n \to \infty} \left( \sin(\sqrt{n + 3}) - \sin(\sqrt{n}) \right) \left( \cos(\sqrt{n + 3}) + \cos(\sqrt{n}) \right)
\]

Please submit your solution to:

- Dr. Christian Avart, cavart@gsu.edu

before the deadline: February 29th, 7:00PM. The WINNER will be awarded with a $15 gift card and a certificate and will be announced in the NEXT issue.

Solution to the January Problem of the Month.

Since \( a_0 = r, a_1 = \sqrt{r}, a_2 = \sqrt[4]{r}, \ldots \), we have \( a_n = r^{1/2^n} \). Since \( r^{1/2^n} = (r^{1/2})^{1/n} \) and \( \lim_{n \to \infty} x^{1/n} = 1 \) for any \( x > 0 \), we obtain \( \lim_{n \to \infty} a_n = \lim_{n \to \infty} (r^{1/2})^{1/n} = 1 \).

Winner: Zack Ritter