THIS YEAR: A 2006-2007 PUZZLE

In a note found stuffed in a stocking, someone finds the following message:

“Help me simplify

\[
2006 \left( \frac{2005}{2006} \right)^{2007} - \left( \frac{2006}{2} \right) \left( \frac{2004}{2006} \right)^{2007} \\
+ \left( \frac{2006}{3} \right) \left( \frac{2003}{2006} \right)^{2007} - \ldots + \left( \frac{2006}{2005} \right) \left( \frac{1}{2006} \right)^{2007}
\]

= \sum_{i=1}^{2005} (-1)^{i+1} \binom{2006}{i} \left( \frac{2006 - i}{2006} \right)^{2007}.

If you can do so without a computer or calculator, I will give you a coupon for a wonderful sleigh ride. HO! HO! HO!”

Solutions to be announced on Groundhog Day! Solutions (and acknowledgment of source) will be available on the Web at http://math.albany.edu/~martinhi/puzzle.html.

Send solutions to: M. Hildebrand, UAlbany, ES 120C, Albany, NY 12222 or via e-mail at martinhi@math.albany.edu

Alas, solutions sent here will not result in the sender receiving such a coupon for a sleigh ride.