Challenge #0

THE MATH JESTER

Fall 2018

Consider the polynomial $g(x) = (x^3 + x)^2$.

1. What is the expanded form of $g(x)$?

2. Substitute (-x) for x. What is the result, i.e., what is g(-x)?

3. Now consider
$$h(x) = (x^3 + x)^{38}.$$

   What can you conclude about $h(x)$ and $h(-x)$? (There is no need to expand the expression!)

4. Is this interesting? (There are multiple correct answers. Use your judgment.)

5. Now consider
$$j(x) = (x^3 + x)^{73}.$$

   What is $j(-x)$? (Again, no need to expand. Just describe the relation between $j(-x)$ and $j(x)$.)