

# Power Mad!



Can you find convincing arguments that explain why all the statements below are true?

- a)  $2^1 + 3^1, 2^3 + 3^3, 2^5 + 3^5, \dots, 2^{99} + 3^{99}$   
are all multiples of 5.
- b)  $1^{99} + 2^{99} + 3^{99} + 4^{99}$   
is a multiple of 5.
- c)  $1^x + 2^x + 3^x + 4^x + 5^x$   
is a multiple of 5 when  $x$  is odd