

FEBRUARY 2014 SOLUTION

Prove that

$$3987^{12} + 4365^{12} \neq 4472^{12}.$$

Proof Notice 3987 and 4365 are divisible by 3 and therefore so is $3987^{12} + 4365^{12}$ but 4472 is not divisible by 3 nor is 4472^{12} . Thus these two numbers cannot be equal.