

Problem of the Week-3

Part 1: Prove the statement: If x is a real number such that $x + \frac{1}{x}$ is an integer, then $x^n + \frac{1}{x^n}$ is also an integer for every natural number n .

Part 2: Under what condition on a and b , can we similarly prove the statement: If x is a real number such that $ax + \frac{b}{x}$ is an integer, then $(ax)^n + \left(\frac{b}{x}\right)^n$ is also an integer for every natural number n .

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¹Posting Date 9/25/06. Submit solutions to Noah Aydin, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 4 pm on 10/06/06.