CS313H Logic, Sets, and Functions: Honors Fall 2012

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Good Morning, Colleagues



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Are there any questions?





• Keeping up and posting on piazza is **required**



Peter Stone



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- Second homework **due at start of class**



• Is this CS or math?



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• There are no positive integer solutions to equation $x^2 - y^2 = 1$



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Prove:

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- $(1/2) \times (3/4) \times (5/6) \times ... \times (99/100) < (1/10)$ 1. Define $A = (1/2) \times (3/4) \times (5/6) \times ... \times (99/100)$. 2. Define $B = (2/3) \times (4/5) \times (6/7) \times ... \times (98/99) \times 1$. 3. Each of these consists of 50 terms, and each term in B is larger than the corresponding term in A. 4. Therefore $A < B \Rightarrow A^2 < AB$. 5. $AB = (1/2) \times (2/3) \times (3/4) \times (4/5) \times (5/6) \times (6/7) \times ... \times (98/99) \times (99/100) \times 1 = 1/100$. 6. So, $A^2 < 1/100 \Rightarrow A < 1/10$.



• Show that there is no rational number r for which $r^3 + r + 1 = 0$



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