

## CSE 390Z: Mathematics for Computation Workshop

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### QuickCheck: Induction (due Monday, November 11)

Please submit a response to the following questions on Gradescope. We do not grade on accuracy, so please submit your best attempt. You may either typeset your responses or hand-write them. Note that hand-written solutions must be legible to be graded.

We have created [this template](#) if you choose to typeset with Latex. [This guide](#) has specific information about scanning and uploading pdf files to Gradescope.

#### 0. Induction: Equality

For any  $n \in \mathbb{N}$ , define  $S_n$  to be the sum of the squares of the first  $n$  positive integers, or

$$S_n = 1^2 + 2^2 + \cdots + n^2.$$

Prove that for all  $n \in \mathbb{N}$ ,  $S_n = \frac{1}{6}n(n+1)(2n+1)$ .

#### 1. Video Solution

Watch [this video](#) on the solution **after** making an initial attempt. Then, answer the following questions.

- (a) What is one thing you took away from the video solution?