

Quiz 6

Math 2001–002, Fall 2016

October 3

Question 1. Write a proof by induction of the theorem below. Use the following rules for generating all natural numbers:

N1 1 is a natural number.

N2 If x is a natural number then $x + 1$ is a natural number.

Theorem. The following formula is true for all natural numbers n :

$$1 \times 2 + 2 \times 3 + 3 \times 4 + \cdots + n(n + 1) = \frac{n(n + 1)(n + 2)}{3}$$