

Homework: #8

Discrete Mathematics (Course Number: MTH-129-51)

Prof. G. Safko

Due: Class #10

Write and solve an Exam-style question (based on what we have learned so far). It cannot be from the problems in the book

The following is an example of an acceptable exam-style question

Question: Prove that the sum of the squares of two consecutive integers is odd

Answer:

Prove that for $n \in \mathbf{Z}$, $(n)^2 + (n + 1)^2$ is odd

Proof for n is even

If n is even, then $n+1$ is odd

If n is even, n^2 is even

If $n+1$ is odd, $(n+1)^2$ is odd

The sum of an even and an odd is odd

QED for n is even

Two consecutive integers have opposite parity

Lemma: product of 2 evens is even

Lemma: product of 2 odds is odd

Lemma: sum of even and odd is odd

Proof for n is odd

If n is odd, then $n+1$ is even

If n is odd, n^2 is odd

If $n+1$ is even, $(n+1)^2$ is even

The sum of an even and an odd is odd

QED for n is odd

Two consecutive integers have opposite parity

Lemma: product of 2 odds is odd

Lemma: product of 2 evens is even

Lemma: sum of even and odd is odd

The following is an example of an unacceptable exam-style question

Question: What does *modus ponens* mean

Answer: It's Latin for "a way of affirming"