Institut für Mathematische Optimierung
TU Braunschweig

WS 2005/2006

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Discrete Mathematics I
Assignment 1 (November 02, 2005)

(This assignment is due on November 09, 2005, 1.00 p.m., by dropping it into the wooden box **in front of** F 310.)

Exercise 1 (Squares):

Prove that the square of an integer ends in 0,1,4,5,6, or 9. (Hint: Write any integer as $n = 10k + h$, where $0 \leq h \leq 9$. How is the last digit of n^2 determined?)

(24 Points)

Exercise 2 (True or false):

Determine whether each of the following statements is true or false by either proving it or by giving a counterexample.

a) If a, b and c are positive integers such that c divides $a - b$, then c divides a.

b) If a, b and c are positive integers such that c divides a and c divides b, then c divides $a - b$.

c) There are no integers a and b such that $a^2 + 4b^2 = 26$.

(12+12+12 Points)