MATH 300: Problem Set #3

Due on: July 23, 2014

Problem 1 *Velleman Problems*

- pp. 106-107 # 2,3,6,7,9
- pp. 122-124 # 2,5,18,19,24
- pp. 133-135 # 2,3,10,19,25
- pp. 143-144 # 2,6,9,10,13,14,29

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Problem 2 *One More Problem*

Prove that there do not exist integers x and y satisfying the equation

$$x^2 + y^2 = 9876543 \tag{1}$$

To do so, the reader might consider the following steps:

(a) Prove that if x is an integer, then x^2 is divisible by 4 or $x^2 - 1$ is divisible by 4.

(b) By using (a), prove that if x and y are integers, then $x^2 + y^2 - 3$ is not divisible by 4.

(c) By using (b), prove that no two integers x and y satisfy Equation (1).

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