Homework 3, March 17, 2022

Answer by complete sentences. Give reasons to all your assertions.

Example 1. Using mathematical induction prove that for every $n \geq 0$ number 7 divides $2^{n+2} + 3^{2n+1}$.

Example 2. Using the Euclid's Algorithm find the greatest common divisor of 784 and 152.

Example 3. Find all the solutions of the following Diophantic equation

$$156\, x + 852\, y = 0.$$

Example 4. Using the extended Euclid's Algorithm find a) the greatest common divisor of 413 and 301 and b) find integers x, y such that

$$301\, x + 413\, y = c,$$

where c is the greatest common divisor of 413 and 301.