

## Homework No.5

student:  
due 06/01/2010

**Problem A:** Use the projection from a rational point method to find a parametrization of all the integer solutions of the equation  $x^2 + y^2 = 5z^2$ . Include only the crucial steps.

P	C	N
-/6	-/2	-/2

**Problem B:** Find all integer  $x, y$  such that  $17x - 11y = 75$ .

P	C	N
-/6	-/2	-/2

**Problem C:** Compute  $\gcd(2^9 - 1, 2^{15} - 1)$ . Do same for  $\gcd(2^{10} - 1, 2^{15} - 1)$  and  $\gcd(2^{11} - 1, 2^{15} - 1)$ ? Make a conjecture what would be  $\gcd(2^m - 1, 2^{15} - 1)$  for an arbitrary  $m \in \mathbb{N}$ .

P	C	N
-/6	-/2	-/2

**Problem D:** Find a blog-post with content related to the topics we have discussed so far in class, and summarize the post and what you think is interesting about it.

P	C	N
-/6	-/2	-/2