

Math 412 Homework 11

your name

Due date: Nov 20, 2015

Solve the following problems. Please remember to use complete sentences and good grammar.

1. Find the simple fraction expression for $\sqrt{29}$ and solve the Pell equation: $x^2 - 29y^2 = 1$.
2. Show that there are no rational points on the circle $x^2 + y^2 = 3$.
3. Show that if (x, y, z) is a primitive Pythagorean triple, then either x or y is divisible by 3.
4. Find all solutions in positive integers of the diophantine equation $x^2 + 2y^2 = z^2$.
5. Find all rational points on the ellipse $x^2 + 3y^2 = 4$ by determine the intersection of a line with rational slope t that goes through $(1, 1)$ with this ellipse.
6. Show that the diophantine equation $x^4 - y^4 = z^2$ has no solutions in nonzero integers using the method of infinite descent.