MATEMATISKA INSTITUTIONEN
STOCKHOLMS UNIVERSITET
Avd. Matematik

SJÄLVSTÄNDIGT ARBETE I MATEMATIK

Torsdagen den 16 juni kl. 15:00-16:00 presenterar Åsa Olausson sitt arbete "Olika sätt att lösa den diofantiska ekvationen $x^2 - dy^2 = 1$, kallad Pells ekvation – En genomgång från indiskt 600-tal fram till moderna metoder" (15 högskolepoäng, grundnivå).

Handledare: Torbjörn Tambour

Plats: Sal 32, hus 5, Kräftriket

Sammanfattning: Although looking quite unassuming, there is so much to say about the Pell equation $x^2 - dy^2 = 1$. And a lot of of great mathematicians has in fact done that. For more than 2 000 years the study of Pell-looking equations has fascinated and contributed to, for example, algebraic number theory that deals with quadratic forms and also for understanding of irrational numbers.

In this thesis we will look at some different problems that can be solved within a Pell equation. We will also, in a rather practical way, present the historical way to a general solution of the equation. And we will discover that the English mathematician John Pell probably had nothing to do with the equation. Furthermore we will answer the questions *"Is there a solution for every d?"*, and if so, *"How many solutions exists for a specific d?"*. At the very end we will get familiar with Archimedes cattle problem that ends up in a Pell equation. When he formulated it (he died 212 years BC), he said that the one who solved it should Go forth in glory! Be assured all deem, thy wisdom in this discipline supreme!". First time the correct solution where published was in 1981 when a computer needed 10 minutes to solve it!

Alla intresserade är välkomna!