

ABSTRAK

Penelitian ini membahas tentang pembuktian solusi persamaan Diophantine non-linier $11^q + 13^r + 31^s + 37^t = u^2 - 1$ dengan q, r, s, t adalah bilangan bulat non-negatif dan u adalah bilangan bulat positif. Pembuktian solusi persamaan Diophantine non-linier $11^q + 13^r + 31^s + 37^t = u^2 - 1$ menggunakan teori kekongruenan. Hasil penelitian menunjukkan bahwa persamaan Diophantine non-linier tersebut mempunyai dua solusi (q, r, s, t, u) yaitu $(1, 0, 1, 1, 9)$ dan $(3, 2, 3, 1, 177)$.

Kata Kunci: bilangan bulat non-negatif, bilangan bulat positif, persamaan Diophantine non-linier, solusi, teori kekongruenan.



ABSTRACT

This research discusses the proof of the solution of a non-linear Diophantine equation $11^q + 13^r + 31^s + 37^t = u^2 - 1$ with q, r, s, t are an non-negative integer, and u is an positive integer. Proving the solution of the non-linier Diophantine equation $11^q + 13^r + 31^s + 37^t = u^2 - 1$ using the theory of congruence. Research results show that non-linear Diophantine equation has two solution (q, r, s, t, u) are $(1, 0, 1, 1, 9)$ and $(3, 2, 3, 1, 177)$.

Keyword: *non-linear Diophantine equation, non-negative integer, positive Integer, solution, theory of Congruence.*

