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**Sujith Vijay\*** ([sujith@math.uiuc.edu](mailto:sujith@math.uiuc.edu)), 1409 W Green St, Urbana, IL 61801. *On a Variant of van der Waerden's Theorem.*

A *quasi-progression* of diameter  $n$  (and *low-difference*  $d$ ) is a sequence  $(x_1, x_2, \dots, x_k)$  with

$$d \leq x_{j+1} - x_j \leq d + n, \quad 1 \leq j \leq k - 1$$

Let  $Q_n(k)$  be the least integer for which any 2-coloring of  $\{1, 2, \dots, Q_n(k)\}$  yields a monochromatic  $k$ -term quasi-progression of diameter  $n$ . It follows from van der Waerden's theorem that  $Q_n(k)$  exists for all  $n$  and  $k$ . Bruce Landman has shown that  $Q_1(k) \geq 2(k-1)^2 + 1$ . I will show how this can be improved to an exponential lower bound, using basic probabilistic techniques and some linear algebra. (Received February 02, 2009)