MAD 3104 DM1   **Quiz 5v**   18 Oct 1995   **Name:**

Show **ALL** work for credit; be neat; and use only **ONE** side of each page of paper.

1. Prove by contradiction: Prove a graph with 45 edges and 24 vertices has a vertex of degree at most 3.

2. Given $a_0 = 2$, $a_1 = 0$ and $a_n = 5a_{n-1} - 6a_{n-2}$ for $n \geq 2$, prove by induction, for each integer $n \geq 0$, $a_n = 6 \cdot 2^n - 4 \cdot 3^n$.