Thursday, April 08, 2010
9:40 AM

Sarkovskii's Theorem:

Given: $3 < 5 < 7 < 9 < \cdots$,

$2\cdot 3 < 2\cdot 5 < 2\cdot 7 < \cdots$

$2^2\cdot 3 < 2^2\cdot 5 < 2^2\cdot 7 < \cdots$

$\cdots < 2^4 < 2^3 < 2^2 < 2^1 < 2^0$

If a function has a point of period n, and $m > n$ (in this ordering), then it has a point of period m.

Corollary: If a f^n has a 3 cycle, it has cycles of all periods

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Thm: If $f(a) = b$, $f(b) = c$, $f(c) = d$, and $d \le a < b < c$, then $\forall n$, $\exists\ x_0$ of period n (ie $f^n(x_0) = x_0$ but $f^{m<n}(x_0) \neq x_0$)