1035-11-728 **Luis A Medina*** (lmedina@math.tulane.edu), Department of Mathematics, Tulane University, LA 70118, **Tewodros Amdeberhan** (tamdeber@tulane.edu), Department of Mathematics, Tulane University, New Orleans, LA 70118, and **Victor H Moll** (vhm@math.tulane.edu), Department of Mathematics, Tulane University, New Orleans, LA 70118. *Asymptotic valuations of sequences satisying first order recurrences.*

Let p be a prime and Q be a polynomial with integer coefficients. We discuss the asymptotics of the p-adic valuation of the sequence t_n, defined by $t_n = Q(n)t_{n-1}$ and the initial condition $t_0 = 1$. The example $Q(n) = n$ deals with Legendre's classical formula for the valuation of $n!$. The case $Q(n) = n^2 + 1$ is linked to the (conjectured non-integrality of the) sequence $x_n = (n + x_{n-1})/(1 - nx_{n-1})$, $x_0 = 1$ for $n \geq 5$.

Theorem. Assume that, for every possible zero of Q modulo p, the derivative does not vanish (modulo p). Then the p-adic valuation of t_n grows linearly in n. (Received September 14, 2007)