SCOTT'S FIBONACCI SCRAPBOOK

Allan Scott
Phoenix, Arizona

The following generating functions are submitted to continue the list in "A Primer for the Fibonacci Numbers: Part VI". Thanks to Kathleen Weland for verifying these.

$$\sum_{n=0}^{\infty} L_{n+k}^3 x^n = \frac{P_k(x)}{1 - 3x - 6x^2 + 3x^3 + x^4}, \quad k = 0, 1, 2, 3$$

$$P_0(x) = 8 - 23x - 24x^2 + x^3$$

$$P_1(x) = 1 + 24x - 23x^2 - 8x^3$$

$$P_2(x) = 27 - 17x - 11x^2 - x^3$$

$$P_3(x) = 64 + 151x - 82x^2 - 27x^3$$

$$\sum_{n=0}^{\infty} F_{n+k}^4 x^n = \frac{P_k(x)}{1 - 5x - 15x^2 + 15x^3 + 5x^4 - x^5}, \quad k = 0, 1, 2, 3, 4$$

$$P_0(x) = x - 4x^2 - 4x^3 + x^4$$

$$P_1(x) = 1 - 4x - 4x^2 + x^3$$

$$P_2(x) = 1 + 11x - 14x^2 - 5x^3 + x^4$$

$$P_3(x) = 16 + x - 20x^2 - 4x^3 + x^4$$

$$P_4(x) = 81 - 220x - 244x^2 - 79x^3 + 16x^4$$

(Generating functions for $\{F_{n+k}^5\}$, k = 0, 1, 2, 3, 4, 5 ; $\{F_{n+k}^6\}$, k = 0, 1, 2, 3, 4, 5, 6; and $\{F_{n+k}^7\}$, k = 0, 1, 2, 3, 4, 5, 6, 7 are given in this entire article, which appears in The Fibonacci Quarterly, Vol. 6, No. 2, April, 1968, pages 176, 191, and 166.)