$$f_2(f_2(p_1, p_2), p_3) .$$

For $n = 4$ there are 360 polynomials, provided that different compositions yield distinct polynomials.

We are unable to determine the number of counting polynomials of P^n, except the case $n = 1$.

Theorem. The identical function $f_1(p_1) = p_1$ is the only polynomial mapping 1 - 1 from P onto itself.

Proof. Suppose $g(p)$ is a counting polynomial of P. Consider the curve $y = g(x)$. It is clear that after a finite number of ups and downs the curve is monotone increasing (to $+\infty$). Let a be a positive integer such that (1) $g(x)$ is monotone for $x \geq a$ and (2) $g(x) < g(a)$ for $x < a$. Since $g(x)$ is a counting function of P, it has to satisfy

$$g(a) = a, \quad g(a + 1) = a + 1, \cdots .$$

For, if $g(a) < a$, then positive numbers $g(1), g(2), \cdots, g(a)$ cannot all be distinct, and if $g(a) > a$ then the curve must come down beyond a, contrary to (1). Now, by the Fundamental Theorem of Algebra we have $g(x) = x$ for all x.

Question. Are

$$x_1 + \binom{s_2 - 1}{2} \qquad \text{and} \qquad x_2 + \binom{s_2 - 1}{2}$$

the only two polynomials mapping 1 - 1 from P^2 onto P?

REFERENCES

1. E. A. Maier, "One-One Correspondence Between the set N of Positive Integers and the Sets N^n and $\bigcup_{n \in N} N^n$," Fibonacci Quarterly, Oct. 1970, pp. 365-371.
2. P. W. Zehna and R. L. Johnson, Elements of Set Theory, Allyn and Bacon, Inc., Boston, 1962, p. 108.

[Continued from p. 584.] REFERENCES

1. H. W. Gould, "Equal Products of Generalized Binomial Coefficients," Fibonacci Quarterly, Vol. 9, No. 4 (1971), pp. 337-346.
2. H. W. Gould, D. C. Rine, and W. L. Scharff, "Algorithm and Computer Program for the Determination of Equal Products of Generalized Binomial Coefficients," to be published.
3. V. E. Hoggatt, Jr., and Walter Hansell, "The Hidden Hexagon Squares," Fibonacci Quarterly, Vol. 9, No. 2 (1971), pp. 120, 133.
4. V. E. Hoggatt, Jr., and G. L. Alexanderson, "A Property of Multinomial Coefficients," Fibonacci Quarterly, Vol. 9, No. 4 (1971), pp. 351-356, 420-421.
5. V. E. Hoggatt, Jr., and A. P. Hillman, "Proof of Gould's Conjecture on Greatest Common Divisors," Fibonacci Quarterly, Vol. 10, No. 6 (1972), pp. 565-568.