

Problem of the week #2

Due September 13th.

Problem. Suppose a function $f(x)$ is defined by

$$f(x) = \sum_{n=0}^{\infty} a_n x^n.$$

Find a closed-form expression for

$$\sum_{k=0}^{\infty} \sum_{\ell=0}^{\infty} \sum_{m=0}^{\infty} \sum_{n=0}^{\infty} a_{k+\ell+m+n} w^k x^\ell y^m z^n.$$

in terms of w, x, y, z and f . Assume w, x, y, z are all distinct.

Justify your answer. Ignore issues of convergence.

Hint: Consider a two-variable version first.

- Partial credit may be given for partial answers.
- Each POW will be due the following week at 1pm.
- Submit to bthorner@unomaha.edu or DSC 203.