A natural sequence with all algebraic numbers & e, π, etc.

Pierre Lanchon pierre.lanchon@sfr.fr
Snecma, Safran Group

Abstract

We generate a list of objects of type number, function, functional, parameterized expression, etc. from which our sequence of numbers will be extracted. When 2 objects f and z are generated, then f(z) will be generated later if f is an arrow and if the types of f and z are compatible. A ground generator gives the first three objects from "?" asked arround the arrows ↺ and ⇄ : The identity polynomial function Z, the look for fixed points and for reciprocals. Then comes the seed which has here 1 object : the derivation functional ∂ . The first generated objects are : $Z,\ FixP,\ Recip,\ \partial, Func\ 1 = \partial(Z),\ Ae^Z = FixP(\partial),\ \int_{A_1}^{Z} . + A_2 = Recip(\partial), 1 = FixP(Func\,1),\ Func\,0 = \partial Func\,1, e^Z, \int_1^Z .+A, \int_1^Z .+1, \int_A^Z .+1, 0 = FixP(Func\,0),\ List\,of\,FixP(e^Z),\ List\,of\,Recip(e^Z),$ $e,\ (Z^2+1)/2,\ e^{Z-1},\ e^Z-e+1,\ \ldots,\ Smallest\ FixP(e^Z),\ \ldots,\ log(Z),$ $e^{Z+1},\ \ldots,\ e^e,\ \ldots$ This sequence is useful in experimental mathematics.

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