

BCH-Lyndon Question

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9:01 PM

Dror Bar-Natan: Academic Pensieve: 2012-12: BCH_Lyndon_Question.nb

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```
In[1]= SetDirectory["C:\\drorbn\\AcademicPensieve\\2012-12"];
<< "../2012-09/FreeLie.m";
BCH[n_Integer] := BCH[<"x", <"y"] [n]

In[8]= Table[BCH[n], {n, 8}]
Out[8]= {<x> + <y>,
  <xy>/2, <xyx>/12 + <xyy>/12, <xyxy>/24,
  <xxxxxy>/720 + <xxxxyy>/180 + <xxxyxy>/360 + <xxxyyy>/180 + <xyxyyy>/120 - <xyyyyy>/720,
  <xxxxxyy>/1440 + <xxxxyxy>/720 + <xxxyyyy>/360 + <xxxyyxy>/240 - <xyyyyyy>/1440,
  <xxxxxxy>/30240 + <xxxxxyy>/5040 + <xxxxyxy>/10080 + <xxxyyyy>/3780 + <xxxyyxy>/10080 + <xyxyyyx>/1680 +
  <xyxyyyx>/1260 + <xyxyyyy>/3780 + <xyxyyxy>/2016 - <xyxyyxy>/5040 + <xyxyyyy>/15120 + <xyxyyxy>/10080 -
  <xyxyyyx>/1512 - <xyxyyyy>/5040 + <xyxyyxy>/1260 - <xyxyyxy>/2016 - <xyxyyyy>/5040 + <xyxyyyx>/30240,
  <xxxxxxyy>/60480 + <xxxxxyxy>/15120 + <xxxxyyyy>/10080 + <xxxxyyxy>/20160 - <xxxxyyxy>/20160 + <xxxxyyyx>/2520 +
  23 <xxxxyyyy>/120960 + <xxxxyyxy>/4032 - <xxxxyyxy>/10080 + 13 <xxxxyyxy>/30240 + <xxxxyyxy>/20160 -
  <xxxxyyyx>/3024 - <xxxxyyyy>/10080 + <xxxxyyxy>/2520 - <xxxxyyxy>/4032 - <xxxxyyxy>/10080 + <xxxxyyyy>/60480}
```

```
In[8]= Table[Length[BCH[n]], {n, 16}]
Out[8]= {2, 2, 2, 2, 6, 5, 18, 17, 55, 55, 186, 185, 630, 629, 2181, 2181}
```

```
In[17]= Do[
  Print[{n, Length[BCH[n]], Cases[BCH[n], _LW, Infinity]}];
  If[EvenQ[n],
    Print["-----"],
  ],
  {n, 10}
]
```

<http://drorbn.net/AcademicPensieve/2012-12/#MathematicaNotebooks>

