
Number of α for which $\text{Ne}[\alpha]$ computed

original definition

(i)

In[21]:= **aorg**[e_] := $2^{(2^e)}$;

(ii)

In[22]:= **borg**[e_] := $2^{(2^e - 1)} - 1$;

(iii)

In[23]:= **cone**[e_] := $2^{(2^e - 1)}$;

In[24]:= **corg**[e_] := $(2^e - 1) \text{ cone}[e]$;

In[25]:= **forg**[e_] := **aorg**[e] + **borg**[e] + **corg**[e] ;

In[26]:= **Simplify**[**forg**[e]]

Out[26]= $-1 + 2^{2^e} + 2^{-1+2^e+e}$

In[27]:= **Table**[**forg**[e], {e, 1, 5}]

Out[27]= {7, 47, 1279, 589 823, 73 014 444 031}

reduction by Remark 1 of Appendix

(i)

In[28]:= **amfd**[e_] := **aorg**[e] / 2;

(ii)

In[29]:= **bmfd**[e_] := **borg**[e] ;

(iii)

In[30]:= **cmfd**[e_] := **corg**[e] / 2;

In[31]:= **fmfd**[e_] := **amfd**[e] + **bmfd**[e] + **cmfd**[e] ;

In[32]:= **Simplify**[**fmfd**[e]]

Out[32]= $\frac{1}{4} (-4 + 3 \times 2^{2^e} + 2^{2^e+e})$

In[33]:= **Table**[**fmfd**[e], {e, 1, 5}]

Out[33]= {4, 27, 703, 311 295, 37 580 963 839}

reduction by all of the Appendix

(i)

In[34]:= **a[e_] := amfd[e];**

(ii)

In[35]:= **b[e_] := 2 × 4^{(2^(e - 1) - 2)} + 3 × 2^{(2^(e - 1) - 2)} - 1;**In[36]:= **Table[b[e], {e, 1, 5}]**

Out[36]= {1, 4, 43, 8383, 536 920 063}

(iii)

In[37]:= **c[e_] := (2^e - 2) cone[e] / 2 + 2 × 4^{(2^(e - 1) - 2)} + 2^{(2^(e - 1) - 2)};**In[38]:= **Table[c[e], {e, 1, 5}]**

Out[38]= {1, 11, 420, 237 632, 32 749 142 016}

Verification : When e = 1, only (1, 1) exists. OK.

When e = 2, (1, 1, ?, ?) has 4 and (1, ?, 1, ?) has 4.

(1, ?, ?, 1) has 3, that is, (1, 0, 0, 1), (1, 0, 2, 1) and (1, 2, 2, 1). Total: 11. OK.

In[39]:= **f[e_] := a[e] + b[e] + c[e];**In[40]:= **Table[f[e], {e, 1, 5}]**

Out[40]= {4, 23, 591, 278 783, 35 433 545 727}