Polychrony as Chinampas.

First read Introduction.nb.

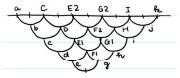
```
f[x_] := x^13 / (1 - x)^14

Sum[1, {a, 1, n - 10}, {b, a + 1, n - 9}, {c, b + 1, n - 8},
 {d, c + 1, n - 7}, {e, d + 1, n - 6}, {f, e + 1, n - 5}, {g, f + 1, n - 4},
 {h, g + 1 , n - 3}, {i, h + 1, n - 2}, {j, i + 1, n - 1}, {k, j + 1, n}]
```

Out[•]= $\left(3\,628\,800\,n - 10\,628\,640\,n^2 + 12\,753\,576\,n^3 - 8\,409\,500\,n^4 + 3\,416\,930\,n^5 - 902\,055\,n^6 + 157\,773\,n^7 - 18\,150\,n^8 + 1320\,n^9 - 55\,n^{10} + n^{11}\right) / 39\,916\,800$

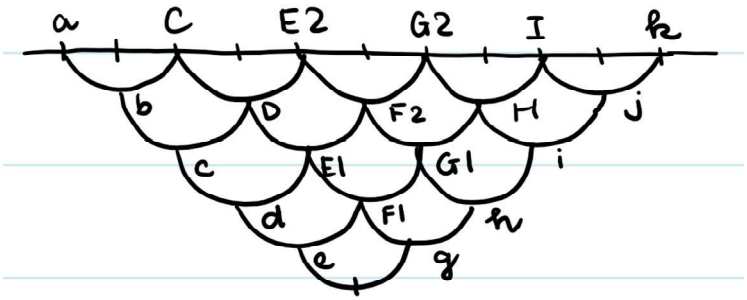
```
In[•]:= FullSimplify[(1 / 39 916 800) (3 628 800 n - 10 628 640 n^2 + 12 753 576 n^3 -
          8 409 500 n^4 + 3 416 930 n^5 - 902 055 n^6 + 157 773 n^7 - 18 150 n^8 + 1320 n^9 - 55 n^10 + n^11)]
```

Out[•]= $\frac{(-10+n)(-9+n)(-8+n)(-7+n)(-6+n)(-5+n)(-4+n)(-3+n)(-2+n)(-1+n)\,n}{39\,916\,800}$

```
In[•]:= graph =
```



Out[•]=



In[]:=
```
Sum[(C - a - 1) * (E2 - C - 1) * (G2 - E2 - 1) * (I - G2 - 1) * (k - I - 1) * (g - e - 1),
 {a, 1, n - 10}, {C, a + 2, n - 8}, {E2, C + 2, n - 6}, {G2, E2 + 2, n - 4}, {I, G2 + 2, n - 2},
 {k, I + 2, n}, {b, a + 1, C - 1}, {D, C + 1, E2 - 1}, {F2, E2 + 1, G2 - 1}, {H, G2 + 1, I - 1},
 {j, I + 1, k - 1}, {c, b + 1, D - 1}, {E1, D + 1, F2 - 1}, {G1, F2 + 1, H - 1}, {i, H + 1, j - 1},
 {d, c + 1, E1 - 1}, {F1, E1 + 1, G1 - 1}, {h, G1 + 1, i - 1}, {e, d + 1, F1 - 1}, {g, F1 + 1, h - 1}]
```

Out[]=
$$\left(-559\,121\,323\,622\,400\,000\,n + 3\,401\,517\,236\,060\,160\,000\,n^2 - 9\,698\,393\,279\,559\,168\,000\,n^3 + 17\,304\,343\,134\,810\,854\,400\,n^4 - 21\,749\,506\,690\,507\,787\,520\,n^5 + 20\,539\,198\,819\,797\,499\,584\,n^6 - 15\,171\,179\,338\,268\,712\,000\,n^7 + 9\,005\,548\,196\,457\,282\,800\,n^8 - 4\,378\,489\,347\,548\,646\,000\,n^9 + 1\,767\,694\,037\,346\,140\,420\,n^{10} - 598\,465\,980\,994\,381\,500\,n^{11} + 171\,092\,005\,786\,051\,025\,n^{12} - 41\,490\,587\,106\,783\,600\,n^{13} + 8\,555\,985\,678\,275\,480\,n^{14} - 1\,501\,152\,570\,630\,000\,n^{15} + 223\,775\,892\,980\,375\,n^{16} - 28\,245\,100\,075\,500\,n^{17} + 3\,001\,244\,399\,450\,n^{18} - 266\,150\,197\,500\,n^{19} + 19\,454\,882\,975\,n^{20} - 1\,151\,706\,600\,n^{21} + 53\,825\,060\,n^{22} - 1\,911\,000\,n^{23} + 48\,425\,n^{24} - 780\,n^{25} + 6\,n^{26}\right) \Big/ 104\,396\,352\,425\,164\,800\,000$$

In[]:=
```
FullSimplify[%5]
```

Out[]=
$$\left((-10+n)\,(-9+n)\,(-8+n)^2\,(-7+n)^2\,(-6+n)^3\,(-5+n)^4\,(-4+n)^3\,(-3+n)^2\,(-2+n)^2\,(-1+n)\,n\,(6369+(-10+n)\,n\,(395+6\,(-10+n)\,n))\right) \Big/ 104\,396\,352\,425\,164\,800\,000$$

In[]:=
```
%6 / %3
```

Out[]=
$$\frac{1}{2\,615\,348\,736\,000}(-8+n)\,(-7+n)\,(-6+n)^2\,(-5+n)^3\,(-4+n)^2\,(-3+n)\,(-2+n)\,(6369+(-10+n)\,n\,(395+6\,(-10+n)\,n))$$

In[]:=
```
Expand[(-8 + n) (-7 + n) (-6 + n)^2 (-5 + n)^3
  (-4 + n)^2 (-3 + n) (-2 + n) (6369 + (-10 + n) n (395 + 6 (-10 + n) n))]
```

Out[]=
$$-154\,078\,848\,000 + 486\,074\,908\,800\,n - 707\,402\,381\,760\,n^2 + 631\,255\,103\,784\,n^3 - 386\,929\,514\,500\,n^4 + 172\,820\,905\,130\,n^5 - 58\,182\,645\,455\,n^6 + 15\,052\,116\,013\,n^7 - 3\,020\,035\,425\,n^8 + 470\,350\,815\,n^9 - 56\,440\,835\,n^{10} + 5\,127\,697\,n^{11} - 341\,575\,n^{12} + 15\,755\,n^{13} - 450\,n^{14} + 6\,n^{15}$$

In[]:=
```
(-154078848000*f(x)+486074908800*x*D[ f(x),x]-707402381760*x*D[x*
 D[ f(x),x],x])/2615348736000
```

```
(-154 078 848 000 * f[x] + 486 074 908 800 * x * D[f[x], x] -
   707 402 381 760 * x * D[x * D[f[x], x], x]) / 2 615 348 736 000
```

Out[]=
$$\frac{1}{2\,615\,348\,736\,000}\left(-\frac{154\,078\,848\,000\,x^{13}}{(1-x)^{14}} + 486\,074\,908\,800\,x\left(\frac{13\,x^{12}}{(1-x)^{14}} + \frac{14\,x^{13}}{(1-x)^{15}}\right) - 707\,402\,381\,760\,x\left(\frac{13\,x^{12}}{(1-x)^{14}} + \frac{14\,x^{13}}{(1-x)^{15}} + x\left(\frac{156\,x^{11}}{(1-x)^{14}} + \frac{364\,x^{12}}{(1-x)^{15}} + \frac{210\,x^{13}}{(1-x)^{16}}\right)\right)\right)$$

In[ ]:=
```
(631255103784*x*D[x*D[x*D[ f(x),x],x],x]-386929514500*x*D[x*D[x*D[
 x*D[ f(x),x],x],x],x])/2615348736000
```

```
(631 255 103 784 * x * D[x * D[x * D[f[x], x], x], x] -
   386 929 514 500 * x * D[x * D[x * D[x * D[f[x], x], x], x], x]) / 2 615 348 736 000
```

Out[ ]=

$$\frac{1}{2\,615\,348\,736\,000}\left(631\,255\,103\,784\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\frac{14\,x^{13}}{(1-x)^{15}}+x\left(\frac{156\,x^{11}}{(1-x)^{14}}+\frac{364\,x^{12}}{(1-x)^{15}}+\frac{210\,x^{13}}{(1-x)^{16}}\right)+\right.\right.$$
$$x\left(\frac{312\,x^{11}}{(1-x)^{14}}+\frac{728\,x^{12}}{(1-x)^{15}}+\frac{420\,x^{13}}{(1-x)^{16}}+x\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)\right)\Big)-$$
$$386\,929\,514\,500\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\frac{14\,x^{13}}{(1-x)^{15}}+x\left(\frac{156\,x^{11}}{(1-x)^{14}}+\frac{364\,x^{12}}{(1-x)^{15}}+\frac{210\,x^{13}}{(1-x)^{16}}\right)+\right.$$
$$x\left(\frac{312\,x^{11}}{(1-x)^{14}}+\frac{728\,x^{12}}{(1-x)^{15}}+\frac{420\,x^{13}}{(1-x)^{16}}+x\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)\right)+$$
$$x\left(\frac{624\,x^{11}}{(1-x)^{14}}+\frac{1456\,x^{12}}{(1-x)^{15}}+\frac{840\,x^{13}}{(1-x)^{16}}+2\,x\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)+\right.$$
$$x\left(\frac{5148\,x^{10}}{(1-x)^{14}}+\frac{19\,656\,x^{11}}{(1-x)^{15}}+\frac{24\,570\,x^{12}}{(1-x)^{16}}+\frac{10\,080\,x^{13}}{(1-x)^{17}}+\right.$$
$$\left.\left.\left.\left.\left.x\left(\frac{17\,160\,x^{9}}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)\right)\right)\right)\right)\right)$$

In[ ]:=
```
(172820905130*x*D[x*D[x*D[x*D[x*D[ f(x),x],x],x],x],x]-58182645455*
 x*D[x*D[x*D[x*D[x*D[x*D[ f(x),x],x],x],x],x],x])/2615348736000
```

```
(172 820 905 130 * x * D[x * D[x * D[x * D[x * D[f[x], x], x], x], x], x] -
   58 182 645 455 * x * D[x * D[x * D[x * D[x * D[f[x], x], x], x], x], x]) / 2 615 348 736 000
```

Out[ ]=

$$\frac{1}{2\,615\,348\,736\,000}\left(172\,820\,905\,130\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\frac{14\,x^{13}}{(1-x)^{15}}+x\left(\frac{156\,x^{11}}{(1-x)^{14}}+\frac{364\,x^{12}}{(1-x)^{15}}+\frac{210\,x^{13}}{(1-x)^{16}}\right)+\right.\right.$$
$$x\left(\frac{312\,x^{11}}{(1-x)^{14}}+\frac{728\,x^{12}}{(1-x)^{15}}+\frac{420\,x^{13}}{(1-x)^{16}}+x\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)\right)+$$
$$x\left(\frac{624\,x^{11}}{(1-x)^{14}}+\frac{1456\,x^{12}}{(1-x)^{15}}+\frac{840\,x^{13}}{(1-x)^{16}}+2\,x\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)+\right.$$
$$x\left(\frac{5148\,x^{10}}{(1-x)^{14}}+\frac{19\,656\,x^{11}}{(1-x)^{15}}+\frac{24\,570\,x^{12}}{(1-x)^{16}}+\frac{10\,080\,x^{13}}{(1-x)^{17}}+\right.$$
$$\left.\left.\left.x\left(\frac{17\,160\,x^{9}}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)\right)\right)+\right.$$
$$x\left(\frac{1248\,x^{11}}{(1-x)^{14}}+\frac{2912\,x^{12}}{(1-x)^{15}}+\frac{1680\,x^{13}}{(1-x)^{16}}+4\,x\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)+\right.$$

$$
\begin{aligned}
&2x\left(\frac{5148x^{10}}{(1-x)^{14}}+\frac{19656x^{11}}{(1-x)^{15}}+\frac{24570x^{12}}{(1-x)^{16}}+\frac{10080x^{13}}{(1-x)^{17}}+\right.\\
&\quad\left.x\left(\frac{17160x^{9}}{(1-x)^{14}}+\frac{96096x^{10}}{(1-x)^{15}}+\frac{196560x^{11}}{(1-x)^{16}}+\frac{174720x^{12}}{(1-x)^{17}}+\frac{57120x^{13}}{(1-x)^{18}}\right)\right)+\\
&x\left(\frac{12012x^{10}}{(1-x)^{14}}+\frac{45864x^{11}}{(1-x)^{15}}+\frac{57330x^{12}}{(1-x)^{16}}+\frac{23520x^{13}}{(1-x)^{17}}+\right.\\
&\quad 3x\left(\frac{17160x^{9}}{(1-x)^{14}}+\frac{96096x^{10}}{(1-x)^{15}}+\frac{196560x^{11}}{(1-x)^{16}}+\frac{174720x^{12}}{(1-x)^{17}}+\frac{57120x^{13}}{(1-x)^{18}}\right)+\\
&\quad 2\left(\frac{1716x^{10}}{(1-x)^{14}}+\frac{6552x^{11}}{(1-x)^{15}}+\frac{8190x^{12}}{(1-x)^{16}}+\frac{3360x^{13}}{(1-x)^{17}}\right)+\\
&\quad x\left(\frac{68640x^{9}}{(1-x)^{14}}+\frac{384384x^{10}}{(1-x)^{15}}+\frac{786240x^{11}}{(1-x)^{16}}+\frac{698880x^{12}}{(1-x)^{17}}+\frac{228480x^{13}}{(1-x)^{18}}+x\left(\frac{154440x^{8}}{(1-x)^{14}}+\right.\right.\\
&\qquad\left.\left.\left.\left.\left.\frac{1201200x^{9}}{(1-x)^{15}}+\frac{3603600x^{10}}{(1-x)^{16}}+\frac{5241600x^{11}}{(1-x)^{17}}+\frac{3712800x^{12}}{(1-x)^{18}}+\frac{1028160x^{13}}{(1-x)^{19}}\right)\right)\right)\right)\right)-\\
&58182645455x\left(\frac{13x^{12}}{(1-x)^{14}}+\frac{14x^{13}}{(1-x)^{15}}+x\left(\frac{156x^{11}}{(1-x)^{14}}+\frac{364x^{12}}{(1-x)^{15}}+\frac{210x^{13}}{(1-x)^{16}}\right)+\right.\\
&\quad x\left(\frac{312x^{11}}{(1-x)^{14}}+\frac{728x^{12}}{(1-x)^{15}}+\frac{420x^{13}}{(1-x)^{16}}+x\left(\frac{1716x^{10}}{(1-x)^{14}}+\frac{6552x^{11}}{(1-x)^{15}}+\frac{8190x^{12}}{(1-x)^{16}}+\frac{3360x^{13}}{(1-x)^{17}}\right)\right)+\\
&\quad x\left(\frac{624x^{11}}{(1-x)^{14}}+\frac{1456x^{12}}{(1-x)^{15}}+\frac{840x^{13}}{(1-x)^{16}}+2x\left(\frac{1716x^{10}}{(1-x)^{14}}+\frac{6552x^{11}}{(1-x)^{15}}+\frac{8190x^{12}}{(1-x)^{16}}+\frac{3360x^{13}}{(1-x)^{17}}\right)+\right.\\
&\qquad x\left(\frac{5148x^{10}}{(1-x)^{14}}+\frac{19656x^{11}}{(1-x)^{15}}+\frac{24570x^{12}}{(1-x)^{16}}+\frac{10080x^{13}}{(1-x)^{17}}+\right.\\
&\qquad\quad\left.\left.\left.x\left(\frac{17160x^{9}}{(1-x)^{14}}+\frac{96096x^{10}}{(1-x)^{15}}+\frac{196560x^{11}}{(1-x)^{16}}+\frac{174720x^{12}}{(1-x)^{17}}+\frac{57120x^{13}}{(1-x)^{18}}\right)\right)\right)\right)+\\
&\quad x\left(\frac{1248x^{11}}{(1-x)^{14}}+\frac{2912x^{12}}{(1-x)^{15}}+\frac{1680x^{13}}{(1-x)^{16}}+4x\left(\frac{1716x^{10}}{(1-x)^{14}}+\frac{6552x^{11}}{(1-x)^{15}}+\frac{8190x^{12}}{(1-x)^{16}}+\frac{3360x^{13}}{(1-x)^{17}}\right)+\right.\\
&\qquad 2x\left(\frac{5148x^{10}}{(1-x)^{14}}+\frac{19656x^{11}}{(1-x)^{15}}+\frac{24570x^{12}}{(1-x)^{16}}+\frac{10080x^{13}}{(1-x)^{17}}+\right.\\
&\qquad\quad\left.\left.x\left(\frac{17160x^{9}}{(1-x)^{14}}+\frac{96096x^{10}}{(1-x)^{15}}+\frac{196560x^{11}}{(1-x)^{16}}+\frac{174720x^{12}}{(1-x)^{17}}+\frac{57120x^{13}}{(1-x)^{18}}\right)\right)+\right.\\
&\qquad x\left(\frac{12012x^{10}}{(1-x)^{14}}+\frac{45864x^{11}}{(1-x)^{15}}+\frac{57330x^{12}}{(1-x)^{16}}+\frac{23520x^{13}}{(1-x)^{17}}+\right.\\
&\qquad\quad 3x\left(\frac{17160x^{9}}{(1-x)^{14}}+\frac{96096x^{10}}{(1-x)^{15}}+\frac{196560x^{11}}{(1-x)^{16}}+\frac{174720x^{12}}{(1-x)^{17}}+\frac{57120x^{13}}{(1-x)^{18}}\right)+\\
&\qquad\quad 2\left(\frac{1716x^{10}}{(1-x)^{14}}+\frac{6552x^{11}}{(1-x)^{15}}+\frac{8190x^{12}}{(1-x)^{16}}+\frac{3360x^{13}}{(1-x)^{17}}\right)+
\end{aligned}
$$

$$x\left(\frac{68\,640\,x^9}{(1-x)^{14}}+\frac{384\,384\,x^{10}}{(1-x)^{15}}+\frac{786\,240\,x^{11}}{(1-x)^{16}}+\frac{698\,880\,x^{12}}{(1-x)^{17}}+\frac{228\,480\,x^{13}}{(1-x)^{18}}+x\left(\frac{154\,440\,x^8}{(1-x)^{14}}+\frac{1\,201\,200\,x^9}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)\right)\right)+$$
$$x\left(\frac{2496\,x^{11}}{(1-x)^{14}}+\frac{5824\,x^{12}}{(1-x)^{15}}+\frac{3360\,x^{13}}{(1-x)^{16}}+8\,x\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)+\right.$$
$$4\,x\left(\frac{5148\,x^{10}}{(1-x)^{14}}+\frac{19\,656\,x^{11}}{(1-x)^{15}}+\frac{24\,570\,x^{12}}{(1-x)^{16}}+\frac{10\,080\,x^{13}}{(1-x)^{17}}+\right.$$
$$x\left(\frac{17\,160\,x^9}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)\Bigg)+$$
$$2\,x\left(\frac{12\,012\,x^{10}}{(1-x)^{14}}+\frac{45\,864\,x^{11}}{(1-x)^{15}}+\frac{57\,330\,x^{12}}{(1-x)^{16}}+\frac{23\,520\,x^{13}}{(1-x)^{17}}+\right.$$
$$3\,x\left(\frac{17\,160\,x^9}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)+$$
$$2\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)+$$
$$x\left(\frac{68\,640\,x^9}{(1-x)^{14}}+\frac{384\,384\,x^{10}}{(1-x)^{15}}+\frac{786\,240\,x^{11}}{(1-x)^{16}}+\frac{698\,880\,x^{12}}{(1-x)^{17}}+\frac{228\,480\,x^{13}}{(1-x)^{18}}+x\left(\frac{154\,440\,x^8}{(1-x)^{14}}+\frac{1\,201\,200\,x^9}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)\right)\right)+$$
$$x\left(\frac{25\,740\,x^{10}}{(1-x)^{14}}+\frac{98\,280\,x^{11}}{(1-x)^{15}}+\frac{122\,850\,x^{12}}{(1-x)^{16}}+\frac{50\,400\,x^{13}}{(1-x)^{17}}+7\,x\left(\frac{17\,160\,x^9}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\right.\right.$$
$$\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\Bigg)+6\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\right.$$
$$\left.\frac{3360\,x^{13}}{(1-x)^{17}}\right)+3\,x\left(\frac{68\,640\,x^9}{(1-x)^{14}}+\frac{384\,384\,x^{10}}{(1-x)^{15}}+\frac{786\,240\,x^{11}}{(1-x)^{16}}+\frac{698\,880\,x^{12}}{(1-x)^{17}}+\frac{228\,480\,x^{13}}{(1-x)^{18}}+x\right.$$
$$\left(\frac{154\,440\,x^8}{(1-x)^{14}}+\frac{1\,201\,200\,x^9}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\right.$$
$$\left.\left.\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)\right)+2\left(\frac{5148\,x^{10}}{(1-x)^{14}}+\frac{19\,656\,x^{11}}{(1-x)^{15}}+\frac{24\,570\,x^{12}}{(1-x)^{16}}+\frac{10\,080\,x^{13}}{(1-x)^{17}}+x\right.$$
$$\left.\left.\left(\frac{17\,160\,x^9}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)\right)+\right.$$
$$x\left(\frac{188\,760\,x^9}{(1-x)^{14}}+\frac{1\,057\,056\,x^{10}}{(1-x)^{15}}+\frac{2\,162\,160\,x^{11}}{(1-x)^{16}}+\frac{1\,921\,920\,x^{12}}{(1-x)^{17}}+\frac{628\,320\,x^{13}}{(1-x)^{18}}+4\right.$$
$$x\left(\frac{154\,440\,x^8}{(1-x)^{14}}+\frac{1\,201\,200\,x^9}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\right.$$

$$\frac{1028160\,x^{13}}{(1-x)^{19}}\Bigg) + 5\,\Bigg(\frac{17160\,x^{9}}{(1-x)^{14}} + \frac{96096\,x^{10}}{(1-x)^{15}} + \frac{196560\,x^{11}}{(1-x)^{16}} + \frac{174720\,x^{12}}{(1-x)^{17}} +$$

$$\frac{57120\,x^{13}}{(1-x)^{18}}\Bigg) + x\,\Bigg(\frac{772200\,x^{8}}{(1-x)^{14}} + \frac{6006000\,x^{9}}{(1-x)^{15}} + \frac{18018000\,x^{10}}{(1-x)^{16}} + \frac{26208000\,x^{11}}{(1-x)^{17}} +$$

$$\frac{18564000\,x^{12}}{(1-x)^{18}} + \frac{5140800\,x^{13}}{(1-x)^{19}} + x\,\Bigg(\frac{1235520\,x^{7}}{(1-x)^{14}} + \frac{12972960\,x^{8}}{(1-x)^{15}} + \frac{54054000\,x^{9}}{(1-x)^{16}} +$$

$$\frac{115315200\,x^{10}}{(1-x)^{17}} + \frac{133660800\,x^{11}}{(1-x)^{18}} + \frac{80196480\,x^{12}}{(1-x)^{19}} + \frac{19535040\,x^{13}}{(1-x)^{20}}\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

In[ ]:=

```
(15052116013*x*D[x*D[x*D[x*D[x*D[x*D[x*D[ f(x),x],x],x],x],x],x],x])/
2615348736000
```

```
(15 052 116 013 * x * D[x * D[x * D[x * D[x * D[x * D[x * D[f[x], x], x], x], x], x], x], x]) /
 2 615 348 736 000
```

Out[ ]=

$$\frac{1}{237758976000} \times 1368374183\,x\,\Bigg(\frac{13\,x^{12}}{(1-x)^{14}} + \frac{14\,x^{13}}{(1-x)^{15}} + x\,\Bigg(\frac{156\,x^{11}}{(1-x)^{14}} + \frac{364\,x^{12}}{(1-x)^{15}} + \frac{210\,x^{13}}{(1-x)^{16}}\Bigg) +$$

$$x\,\Bigg(\frac{312\,x^{11}}{(1-x)^{14}} + \frac{728\,x^{12}}{(1-x)^{15}} + \frac{420\,x^{13}}{(1-x)^{16}} + x\,\Bigg(\frac{1716\,x^{10}}{(1-x)^{14}} + \frac{6552\,x^{11}}{(1-x)^{15}} + \frac{8190\,x^{12}}{(1-x)^{16}} + \frac{3360\,x^{13}}{(1-x)^{17}}\Bigg)\Bigg) +$$

$$x\,\Bigg(\frac{624\,x^{11}}{(1-x)^{14}} + \frac{1456\,x^{12}}{(1-x)^{15}} + \frac{840\,x^{13}}{(1-x)^{16}} + 2\,x\,\Bigg(\frac{1716\,x^{10}}{(1-x)^{14}} + \frac{6552\,x^{11}}{(1-x)^{15}} + \frac{8190\,x^{12}}{(1-x)^{16}} + \frac{3360\,x^{13}}{(1-x)^{17}}\Bigg) +$$

$$x\,\Bigg(\frac{5148\,x^{10}}{(1-x)^{14}} + \frac{19656\,x^{11}}{(1-x)^{15}} + \frac{24570\,x^{12}}{(1-x)^{16}} + \frac{10080\,x^{13}}{(1-x)^{17}} +$$

$$x\,\Bigg(\frac{17160\,x^{9}}{(1-x)^{14}} + \frac{96096\,x^{10}}{(1-x)^{15}} + \frac{196560\,x^{11}}{(1-x)^{16}} + \frac{174720\,x^{12}}{(1-x)^{17}} + \frac{57120\,x^{13}}{(1-x)^{18}}\Bigg)\Bigg)\Bigg) +$$

$$x\,\Bigg(\frac{1248\,x^{11}}{(1-x)^{14}} + \frac{2912\,x^{12}}{(1-x)^{15}} + \frac{1680\,x^{13}}{(1-x)^{16}} + 4\,x\,\Bigg(\frac{1716\,x^{10}}{(1-x)^{14}} + \frac{6552\,x^{11}}{(1-x)^{15}} + \frac{8190\,x^{12}}{(1-x)^{16}} + \frac{3360\,x^{13}}{(1-x)^{17}}\Bigg) +$$

$$2\,x\,\Bigg(\frac{5148\,x^{10}}{(1-x)^{14}} + \frac{19656\,x^{11}}{(1-x)^{15}} + \frac{24570\,x^{12}}{(1-x)^{16}} + \frac{10080\,x^{13}}{(1-x)^{17}} +$$

$$x\,\Bigg(\frac{17160\,x^{9}}{(1-x)^{14}} + \frac{96096\,x^{10}}{(1-x)^{15}} + \frac{196560\,x^{11}}{(1-x)^{16}} + \frac{174720\,x^{12}}{(1-x)^{17}} + \frac{57120\,x^{13}}{(1-x)^{18}}\Bigg)\Bigg) +$$

$$x\,\Bigg(\frac{12012\,x^{10}}{(1-x)^{14}} + \frac{45864\,x^{11}}{(1-x)^{15}} + \frac{57330\,x^{12}}{(1-x)^{16}} + \frac{23520\,x^{13}}{(1-x)^{17}} + 3\,x\,\Bigg(\frac{17160\,x^{9}}{(1-x)^{14}} + \frac{96096\,x^{10}}{(1-x)^{15}} + \frac{196560\,x^{11}}{(1-x)^{16}} +$$

$$\frac{174720\,x^{12}}{(1-x)^{17}} + \frac{57120\,x^{13}}{(1-x)^{18}}\Bigg) + 2\,\Bigg(\frac{1716\,x^{10}}{(1-x)^{14}} + \frac{6552\,x^{11}}{(1-x)^{15}} + \frac{8190\,x^{12}}{(1-x)^{16}} + \frac{3360\,x^{13}}{(1-x)^{17}}\Bigg) +$$

$$x\,\Bigg(\frac{68640\,x^{9}}{(1-x)^{14}} + \frac{384384\,x^{10}}{(1-x)^{15}} + \frac{786240\,x^{11}}{(1-x)^{16}} + \frac{698880\,x^{12}}{(1-x)^{17}} + \frac{228480\,x^{13}}{(1-x)^{18}} + x\,\Bigg(\frac{154440\,x^{8}}{(1-x)^{14}} +$$

$$\frac{1\,201\,200\,x^9}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\Bigg)\Bigg)\Bigg)\Bigg)+$$

$$x\left(\frac{2496\,x^{11}}{(1-x)^{14}}+\frac{5824\,x^{12}}{(1-x)^{15}}+\frac{3360\,x^{13}}{(1-x)^{16}}+8\,x\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)+\right.$$

$$4\,x\left(\frac{5148\,x^{10}}{(1-x)^{14}}+\frac{19\,656\,x^{11}}{(1-x)^{15}}+\frac{24\,570\,x^{12}}{(1-x)^{16}}+\frac{10\,080\,x^{13}}{(1-x)^{17}}+\right.$$

$$x\left(\frac{17\,160\,x^9}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)\Bigg)+2\,x$$

$$\left(\frac{12\,012\,x^{10}}{(1-x)^{14}}+\frac{45\,864\,x^{11}}{(1-x)^{15}}+\frac{57\,330\,x^{12}}{(1-x)^{16}}+\frac{23\,520\,x^{13}}{(1-x)^{17}}+3\,x\left(\frac{17\,160\,x^9}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\right.\right.$$

$$\left.\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)+2\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)+$$

$$x\left(\frac{68\,640\,x^9}{(1-x)^{14}}+\frac{384\,384\,x^{10}}{(1-x)^{15}}+\frac{786\,240\,x^{11}}{(1-x)^{16}}+\frac{698\,880\,x^{12}}{(1-x)^{17}}+\frac{228\,480\,x^{13}}{(1-x)^{18}}+x\left(\frac{154\,440\,x^8}{(1-x)^{14}}+\right.\right.$$

$$\left.\left.\frac{1\,201\,200\,x^9}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)\right)\Bigg)+x$$

$$\left(\frac{25\,740\,x^{10}}{(1-x)^{14}}+\frac{98\,280\,x^{11}}{(1-x)^{15}}+\frac{122\,850\,x^{12}}{(1-x)^{16}}+\frac{50\,400\,x^{13}}{(1-x)^{17}}+7\,x\left(\frac{17\,160\,x^9}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\right.\right.$$

$$\left.\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)+6\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)+$$

$$3\,x\left(\frac{68\,640\,x^9}{(1-x)^{14}}+\frac{384\,384\,x^{10}}{(1-x)^{15}}+\frac{786\,240\,x^{11}}{(1-x)^{16}}+\frac{698\,880\,x^{12}}{(1-x)^{17}}+\frac{228\,480\,x^{13}}{(1-x)^{18}}+x\left(\frac{154\,440\,x^8}{(1-x)^{14}}+\right.\right.$$

$$\left.\left.\frac{1\,201\,200\,x^9}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)\right)+$$

$$2\left(\frac{5148\,x^{10}}{(1-x)^{14}}+\frac{19\,656\,x^{11}}{(1-x)^{15}}+\frac{24\,570\,x^{12}}{(1-x)^{16}}+\frac{10\,080\,x^{13}}{(1-x)^{17}}+x\left(\frac{17\,160\,x^9}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\right.\right.$$

$$\left.\left.\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)\right)+$$

$$x\left(\frac{188\,760\,x^9}{(1-x)^{14}}+\frac{1\,057\,056\,x^{10}}{(1-x)^{15}}+\frac{2\,162\,160\,x^{11}}{(1-x)^{16}}+\frac{1\,921\,920\,x^{12}}{(1-x)^{17}}+\frac{628\,320\,x^{13}}{(1-x)^{18}}+\right.$$

$$4\,x\left(\frac{154\,440\,x^8}{(1-x)^{14}}+\frac{1\,201\,200\,x^9}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\right.$$

$$\left.\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)+5\left(\frac{17\,160\,x^9}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)+$$

$$x\left(\frac{772\,200\,x^8}{(1-x)^{14}}+\frac{6\,006\,000\,x^9}{(1-x)^{15}}+\frac{18\,018\,000\,x^{10}}{(1-x)^{16}}+\frac{26\,208\,000\,x^{11}}{(1-x)^{17}}+\frac{18\,564\,000\,x^{12}}{(1-x)^{18}}+\right.$$

$$\frac{5\,140\,800\,x^{13}}{(1-x)^{19}} + x\left(\frac{1\,235\,520\,x^{7}}{(1-x)^{14}} + \frac{12\,972\,960\,x^{8}}{(1-x)^{15}} + \frac{54\,054\,000\,x^{9}}{(1-x)^{16}} + \frac{115\,315\,200\,x^{10}}{(1-x)^{17}} + \frac{133\,660\,800\,x^{11}}{(1-x)^{18}} + \frac{80\,196\,480\,x^{12}}{(1-x)^{19}} + \frac{19\,535\,040\,x^{13}}{(1-x)^{20}}\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg) +$$
$$x\left(\frac{4992\,x^{11}}{(1-x)^{14}} + \frac{11\,648\,x^{12}}{(1-x)^{15}} + \frac{6720\,x^{13}}{(1-x)^{16}} + 16\,x\left(\frac{1716\,x^{10}}{(1-x)^{14}} + \frac{6552\,x^{11}}{(1-x)^{15}} + \frac{8190\,x^{12}}{(1-x)^{16}} + \frac{3360\,x^{13}}{(1-x)^{17}}\right) +\right.$$
$$8\,x\left(\frac{5148\,x^{10}}{(1-x)^{14}} + \frac{19\,656\,x^{11}}{(1-x)^{15}} + \frac{24\,570\,x^{12}}{(1-x)^{16}} + \frac{10\,080\,x^{13}}{(1-x)^{17}} + x\left(\frac{17\,160\,x^{9}}{(1-x)^{14}} + \frac{96\,096\,x^{10}}{(1-x)^{15}} + \frac{196\,560\,x^{11}}{(1-x)^{16}} + \frac{174\,720\,x^{12}}{(1-x)^{17}} + \frac{57\,120\,x^{13}}{(1-x)^{18}}\right)\right) +$$
$$4\,x\left(\frac{12\,012\,x^{10}}{(1-x)^{14}} + \frac{45\,864\,x^{11}}{(1-x)^{15}} + \frac{57\,330\,x^{12}}{(1-x)^{16}} + \frac{23\,520\,x^{13}}{(1-x)^{17}} + 3\,x\left(\frac{17\,160\,x^{9}}{(1-x)^{14}} + \frac{96\,096\,x^{10}}{(1-x)^{15}} + \frac{196\,560\,x^{11}}{(1-x)^{16}} + \frac{174\,720\,x^{12}}{(1-x)^{17}} + \frac{57\,120\,x^{13}}{(1-x)^{18}}\right) +\right.$$
$$2\left(\frac{1716\,x^{10}}{(1-x)^{14}} + \frac{6552\,x^{11}}{(1-x)^{15}} + \frac{8190\,x^{12}}{(1-x)^{16}} + \frac{3360\,x^{13}}{(1-x)^{17}}\right) +$$
$$x\left(\frac{68\,640\,x^{9}}{(1-x)^{14}} + \frac{384\,384\,x^{10}}{(1-x)^{15}} + \frac{786\,240\,x^{11}}{(1-x)^{16}} + \frac{698\,880\,x^{12}}{(1-x)^{17}} + \frac{228\,480\,x^{13}}{(1-x)^{18}} + x\left(\frac{154\,440\,x^{8}}{(1-x)^{14}} + \frac{1\,201\,200\,x^{9}}{(1-x)^{15}} + \frac{3\,603\,600\,x^{10}}{(1-x)^{16}} + \frac{5\,241\,600\,x^{11}}{(1-x)^{17}} + \frac{3\,712\,800\,x^{12}}{(1-x)^{18}} + \frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)\right)\Bigg)\Bigg) +$$
$$2\,x\left(\frac{25\,740\,x^{10}}{(1-x)^{14}} + \frac{98\,280\,x^{11}}{(1-x)^{15}} + \frac{122\,850\,x^{12}}{(1-x)^{16}} + \frac{50\,400\,x^{13}}{(1-x)^{17}} + 7\,x\left(\frac{17\,160\,x^{9}}{(1-x)^{14}} + \frac{96\,096\,x^{10}}{(1-x)^{15}} + \frac{196\,560\,x^{11}}{(1-x)^{16}} + \frac{174\,720\,x^{12}}{(1-x)^{17}} + \frac{57\,120\,x^{13}}{(1-x)^{18}}\right) +\right.$$
$$6\left(\frac{1716\,x^{10}}{(1-x)^{14}} + \frac{6552\,x^{11}}{(1-x)^{15}} + \frac{8190\,x^{12}}{(1-x)^{16}} + \frac{3360\,x^{13}}{(1-x)^{17}}\right) +$$
$$3\,x\left(\frac{68\,640\,x^{9}}{(1-x)^{14}} + \frac{384\,384\,x^{10}}{(1-x)^{15}} + \frac{786\,240\,x^{11}}{(1-x)^{16}} + \frac{698\,880\,x^{12}}{(1-x)^{17}} + \frac{228\,480\,x^{13}}{(1-x)^{18}} + x\left(\frac{154\,440\,x^{8}}{(1-x)^{14}} + \frac{1\,201\,200\,x^{9}}{(1-x)^{15}} + \frac{3\,603\,600\,x^{10}}{(1-x)^{16}} + \frac{5\,241\,600\,x^{11}}{(1-x)^{17}} + \frac{3\,712\,800\,x^{12}}{(1-x)^{18}} + \frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)\right) +$$
$$2\left(\frac{5148\,x^{10}}{(1-x)^{14}} + \frac{19\,656\,x^{11}}{(1-x)^{15}} + \frac{24\,570\,x^{12}}{(1-x)^{16}} + \frac{10\,080\,x^{13}}{(1-x)^{17}} + x\left(\frac{17\,160\,x^{9}}{(1-x)^{14}} + \frac{96\,096\,x^{10}}{(1-x)^{15}} + \frac{196\,560\,x^{11}}{(1-x)^{16}} + \frac{174\,720\,x^{12}}{(1-x)^{17}} + \frac{57\,120\,x^{13}}{(1-x)^{18}}\right)\right) +$$
$$x\left(\frac{188\,760\,x^{9}}{(1-x)^{14}} + \frac{1\,057\,056\,x^{10}}{(1-x)^{15}} + \frac{2\,162\,160\,x^{11}}{(1-x)^{16}} + \frac{1\,921\,920\,x^{12}}{(1-x)^{17}} + \frac{628\,320\,x^{13}}{(1-x)^{18}} +\right.$$

$$4x\left(\frac{154440x^8}{(1-x)^{14}}+\frac{1201200x^9}{(1-x)^{15}}+\frac{3603600x^{10}}{(1-x)^{16}}+\frac{5241600x^{11}}{(1-x)^{17}}+\frac{3712800x^{12}}{(1-x)^{18}}+\frac{1028160x^{13}}{(1-x)^{19}}\right)+5\left(\frac{17160x^9}{(1-x)^{14}}+\frac{96096x^{10}}{(1-x)^{15}}+\frac{196560x^{11}}{(1-x)^{16}}+\frac{174720x^{12}}{(1-x)^{17}}+\frac{57120x^{13}}{(1-x)^{18}}\right)+x\left(\frac{772200x^8}{(1-x)^{14}}+\frac{6006000x^9}{(1-x)^{15}}+\frac{18018000x^{10}}{(1-x)^{16}}+\frac{26208000x^{11}}{(1-x)^{17}}+\frac{18564000x^{12}}{(1-x)^{18}}+\frac{5140800x^{13}}{(1-x)^{19}}+x\left(\frac{1235520x^7}{(1-x)^{14}}+\frac{12972960x^8}{(1-x)^{15}}+\frac{54054000x^9}{(1-x)^{16}}+\frac{115315200x^{10}}{(1-x)^{17}}+\frac{133660800x^{11}}{(1-x)^{18}}+\frac{80196480x^{12}}{(1-x)^{19}}+\frac{19535040x^{13}}{(1-x)^{20}}\right)\right)\right)+x\left(\frac{53196x^{10}}{(1-x)^{14}}+\frac{203112x^{11}}{(1-x)^{15}}+\frac{253890x^{12}}{(1-x)^{16}}+\frac{104160x^{13}}{(1-x)^{17}}+15x\left(\frac{17160x^9}{(1-x)^{14}}+\frac{96096x^{10}}{(1-x)^{15}}+\frac{196560x^{11}}{(1-x)^{16}}+\frac{174720x^{12}}{(1-x)^{17}}+\frac{57120x^{13}}{(1-x)^{18}}\right)+14\left(\frac{1716x^{10}}{(1-x)^{14}}+\frac{6552x^{11}}{(1-x)^{15}}+\frac{8190x^{12}}{(1-x)^{16}}+\frac{3360x^{13}}{(1-x)^{17}}\right)+7x\left(\frac{68640x^9}{(1-x)^{14}}+\frac{384384x^{10}}{(1-x)^{15}}+\frac{786240x^{11}}{(1-x)^{16}}+\frac{698880x^{12}}{(1-x)^{17}}+\frac{228480x^{13}}{(1-x)^{18}}+x\left(\frac{154440x^8}{(1-x)^{14}}+\frac{1201200x^9}{(1-x)^{15}}+\frac{3603600x^{10}}{(1-x)^{16}}+\frac{5241600x^{11}}{(1-x)^{17}}+\frac{3712800x^{12}}{(1-x)^{18}}+\frac{1028160x^{13}}{(1-x)^{19}}\right)\right)+6\left(\frac{5148x^{10}}{(1-x)^{14}}+\frac{19656x^{11}}{(1-x)^{15}}+\frac{24570x^{12}}{(1-x)^{16}}+\frac{10080x^{13}}{(1-x)^{17}}+x\left(\frac{17160x^9}{(1-x)^{14}}+\frac{96096x^{10}}{(1-x)^{15}}+\frac{196560x^{11}}{(1-x)^{16}}+\frac{174720x^{12}}{(1-x)^{17}}+\frac{57120x^{13}}{(1-x)^{18}}\right)\right)+3x\left(\frac{188760x^9}{(1-x)^{14}}+\frac{1057056x^{10}}{(1-x)^{15}}+\frac{2162160x^{11}}{(1-x)^{16}}+\frac{1921920x^{12}}{(1-x)^{17}}+\frac{628320x^{13}}{(1-x)^{18}}+4x\left(\frac{154440x^8}{(1-x)^{14}}+\frac{1201200x^9}{(1-x)^{15}}+\frac{3603600x^{10}}{(1-x)^{16}}+\frac{5241600x^{11}}{(1-x)^{17}}+\frac{3712800x^{12}}{(1-x)^{18}}+\frac{1028160x^{13}}{(1-x)^{19}}\right)+5\left(\frac{17160x^9}{(1-x)^{14}}+\frac{96096x^{10}}{(1-x)^{15}}+\frac{196560x^{11}}{(1-x)^{16}}+\frac{174720x^{12}}{(1-x)^{17}}+\frac{57120x^{13}}{(1-x)^{18}}\right)+x\left(\frac{772200x^8}{(1-x)^{14}}+\frac{6006000x^9}{(1-x)^{15}}+\frac{18018000x^{10}}{(1-x)^{16}}+\frac{26208000x^{11}}{(1-x)^{17}}+\frac{18564000x^{12}}{(1-x)^{18}}+\frac{5140800x^{13}}{(1-x)^{19}}+x\left(\frac{1235520x^7}{(1-x)^{14}}+\frac{12972960x^8}{(1-x)^{15}}+\frac{54054000x^9}{(1-x)^{16}}+\frac{115315200x^{10}}{(1-x)^{17}}+\frac{133660800x^{11}}{(1-x)^{18}}+\frac{80196480x^{12}}{(1-x)^{19}}+\frac{19535040x^{13}}{(1-x)^{20}}\right)\right)\right)+2\left(\frac{12012x^{10}}{(1-x)^{14}}+\right.$$

$$\frac{45\,864\,x^{11}}{(1-x)^{15}}+\frac{57\,330\,x^{12}}{(1-x)^{16}}+\frac{23\,520\,x^{13}}{(1-x)^{17}}+3\,x\left(\frac{17\,160\,x^{9}}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)+2\left(\frac{1716\,x^{10}}{(1-x)^{14}}+\frac{6552\,x^{11}}{(1-x)^{15}}+\frac{8190\,x^{12}}{(1-x)^{16}}+\frac{3360\,x^{13}}{(1-x)^{17}}\right)+x\left(\frac{68\,640\,x^{9}}{(1-x)^{14}}+\frac{384\,384\,x^{10}}{(1-x)^{15}}+\frac{786\,240\,x^{11}}{(1-x)^{16}}+\frac{698\,880\,x^{12}}{(1-x)^{17}}+\frac{228\,480\,x^{13}}{(1-x)^{18}}+x\left(\frac{154\,440\,x^{8}}{(1-x)^{14}}+\frac{1\,201\,200\,x^{9}}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)\right)+x\left(\frac{446\,160\,x^{9}}{(1-x)^{14}}+\frac{2\,498\,496\,x^{10}}{(1-x)^{15}}+\frac{5\,110\,560\,x^{11}}{(1-x)^{16}}+\frac{4\,542\,720\,x^{12}}{(1-x)^{17}}+\frac{1\,485\,120\,x^{13}}{(1-x)^{18}}+11\,x\left(\frac{154\,440\,x^{8}}{(1-x)^{14}}+\frac{1\,201\,200\,x^{9}}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)+18\left(\frac{17\,160\,x^{9}}{(1-x)^{14}}+\frac{96\,096\,x^{10}}{(1-x)^{15}}+\frac{196\,560\,x^{11}}{(1-x)^{16}}+\frac{174\,720\,x^{12}}{(1-x)^{17}}+\frac{57\,120\,x^{13}}{(1-x)^{18}}\right)+4\,x\left(\frac{772\,200\,x^{8}}{(1-x)^{14}}+\frac{6\,006\,000\,x^{9}}{(1-x)^{15}}+\frac{18\,018\,000\,x^{10}}{(1-x)^{16}}+\frac{26\,208\,000\,x^{11}}{(1-x)^{17}}+\frac{18\,564\,000\,x^{12}}{(1-x)^{18}}+\frac{5\,140\,800\,x^{13}}{(1-x)^{19}}+x\left(\frac{1\,235\,520\,x^{7}}{(1-x)^{14}}+\frac{12\,972\,960\,x^{8}}{(1-x)^{15}}+\frac{54\,054\,000\,x^{9}}{(1-x)^{16}}+\frac{115\,315\,200\,x^{10}}{(1-x)^{17}}+\frac{133\,660\,800\,x^{11}}{(1-x)^{18}}+\frac{80\,196\,480\,x^{12}}{(1-x)^{19}}+\frac{19\,535\,040\,x^{13}}{(1-x)^{20}}\right)\right)+5\left(\frac{68\,640\,x^{9}}{(1-x)^{14}}+\frac{384\,384\,x^{10}}{(1-x)^{15}}+\frac{786\,240\,x^{11}}{(1-x)^{16}}+\frac{698\,880\,x^{12}}{(1-x)^{17}}+\frac{228\,480\,x^{13}}{(1-x)^{18}}+x\left(\frac{154\,440\,x^{8}}{(1-x)^{14}}+\frac{1\,201\,200\,x^{9}}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)\right)+x\left(\frac{2\,471\,040\,x^{8}}{(1-x)^{14}}+\frac{19\,219\,200\,x^{9}}{(1-x)^{15}}+\frac{57\,657\,600\,x^{10}}{(1-x)^{16}}+\frac{83\,865\,600\,x^{11}}{(1-x)^{17}}+\frac{59\,404\,800\,x^{12}}{(1-x)^{18}}+\frac{16\,450\,560\,x^{13}}{(1-x)^{19}}+5\,x\left(\frac{1\,235\,520\,x^{7}}{(1-x)^{14}}+\frac{12\,972\,960\,x^{8}}{(1-x)^{15}}+\frac{54\,054\,000\,x^{9}}{(1-x)^{16}}+\frac{115\,315\,200\,x^{10}}{(1-x)^{17}}+\frac{133\,660\,800\,x^{11}}{(1-x)^{18}}+\frac{80\,196\,480\,x^{12}}{(1-x)^{19}}+\frac{19\,535\,040\,x^{13}}{(1-x)^{20}}\right)+9\left(\frac{154\,440\,x^{8}}{(1-x)^{14}}+\frac{1\,201\,200\,x^{9}}{(1-x)^{15}}+\frac{3\,603\,600\,x^{10}}{(1-x)^{16}}+\frac{5\,241\,600\,x^{11}}{(1-x)^{17}}+\frac{3\,712\,800\,x^{12}}{(1-x)^{18}}+\frac{1\,028\,160\,x^{13}}{(1-x)^{19}}\right)+x\left(\frac{7\,413\,120\,x^{7}}{(1-x)^{14}}+\frac{77\,837\,760\,x^{8}}{(1-x)^{15}}+\frac{324\,324\,000\,x^{9}}{(1-x)^{16}}+\frac{691\,891\,200\,x^{10}}{(1-x)^{17}}+\frac{801\,964\,800\,x^{11}}{(1-x)^{18}}+\frac{481\,178\,880\,x^{12}}{(1-x)^{19}}+\frac{117\,210\,240\,x^{13}}{(1-x)^{20}}+x\left(\frac{8\,648\,640\,x^{6}}{(1-x)^{14}}+\right.$$

$$\frac{121\,080\,960\,x^7}{(1-x)^{15}}+\frac{681\,080\,400\,x^8}{(1-x)^{16}}+\frac{2\,018\,016\,000\,x^9}{(1-x)^{17}}+\frac{3\,430\,627\,200\,x^{10}}{(1-x)^{18}}+$$
$$\frac{3\,368\,252\,160\,x^{11}}{(1-x)^{19}}+\frac{1\,777\,688\,640\,x^{12}}{(1-x)^{20}}+\frac{390\,700\,800\,x^{13}}{(1-x)^{21}}\Big)\Big)\Big)\Big)\Big)\Big)\Big)$$

In[ ]:=
```
(-3020035425*x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[ f(x),x],x],x],x],x],x],x],
 x],x])/2615348736000
```

```
(-3 020 035 425 * x * D[x * D[x * D[x * D[x * D[x * D[x * D[x * D[f[x], x], x], x], x], x], x], x], x]) /
 2 615 348 736 000
```

Out[ ]=

$$-\frac{1}{3\,170\,119\,680}\times 3\,660\,649\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\cdots 7\cdots+x\left(\frac{9984\,x^{11}}{(1-x)^{14}}+\cdots 7\cdots+x\left(\frac{108\,108\,x^{10}}{(1-x)^{14}}+\cdots 11\cdots+x\left(\frac{978\,120\,x^9}{(1-x)^{14}}+\right.\right.\right.\right.$$
$$\cdots 10\cdots+x\left(\frac{6\,486\,480\,x^8}{(1-x)^{14}}+\frac{\cdots 1\cdots}{\cdots 1\cdots^{15}}+\cdots 7\cdots+9\cdots 1\cdots+x\left(\frac{27\,181\,440\,x^7}{(1-x)^{14}}+\right.\right.\right.$$
$$\cdots 8\cdots+x\left(\frac{60\,540\,480\,x^6}{(1-x)^{14}}+\frac{847\,566\,720\,x^7}{(1-x)^{15}}+\cdots 5\cdots+\frac{2\,734\,905\,600\,\cdots 1\cdots}{\cdots 1\cdots^{21}}+\right.\right.$$
$$\left.\left.\left.x\left(\frac{51\,891\,840\,x^5}{(1-x)^{14}}+\cdots 7\cdots+\frac{8\,204\,716\,800\,x^{13}}{(1-x)^{22}}\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[ ]:=
```
(470350815*x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[ f(x),x],x],x],x],x],
 x],x],x],x])/2615348736000
```

```
(470 350 815 * x *
   D[x * D[x * D[x * D[x * D[x * D[x * D[x * D[x * D[f[x], x], x], x], x], x], x], x], x],
    x]) / 2 615 348 736 000
```

Out[ ]=

$$\frac{1}{15\,850\,598\,400}\times 2\,850\,611\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\cdots 8\cdots+x\left(\frac{19\,968\,x^{11}}{(1-x)^{14}}+\cdots 8\cdots+x\left(\frac{217\,932\,x^{10}}{(1-x)^{14}}+\frac{832\,104\,\cdots 1\cdots}{\cdots 1\cdots^{15}}+\cdots 11\cdots+\right.\right.\right.$$
$$2\cdots 1\cdots+x\left(\frac{2\,059\,200\,x^9}{(1-x)^{14}}+\cdots 12\cdots+x\left(\frac{15\,289\,560\,x^8}{(1-x)^{14}}+\cdots 11\cdots+x\right.\right.\right.$$
$$\left.\left.\left.\left(\frac{79\,073\,280\,x^7}{(1-x)^{14}}+\cdots 10\cdots+x\left(\frac{250\,810\,560\,x^6}{(1-x)^{14}}+\cdots 9\cdots+x\left(\frac{415\,134\,720\,x^5}{(1-x)^{14}}+\right.\right.\right.\right.\right.$$
$$\left.\left.\left.\left.\left.\cdots 8\cdots+x\left(\frac{259\,459\,200\,x^4}{(\cdots 1\cdots\ \cdots 1\cdots^{14}}+\cdots 8\cdots+\frac{\cdots 1\cdots}{\cdots 1\cdots}\right)\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[•]:=
```
(-56440835*x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[ f(x),x],x],x],x],
  x],x],x],x],x],x])/2615348736000
```

```
(-56 440 835 * x *
   D[x * D[x * D[x * D[x * D[x * D[x * D[x * D[x * D[f[x], x], x], x], x], x], x], x], x],
    x]) / 2 615 348 736 000
```

Out[•]=

$$-\frac{1}{47\,551\,795\,200}\times 1\,026\,197\ \langle\cdots 1\cdots\rangle\ \langle\cdots 1\cdots\rangle$$
$$\left(\frac{13\,x^{12}}{(1-x)^{14}}+\frac{14\ \langle\cdots 1\cdots\rangle}{\langle\cdots 1\cdots\rangle^{15}}+\langle\cdots 7\cdots\rangle+x\ \langle\cdots 1\cdots\rangle+x\left(\frac{39\,936\,x^{11}}{(1-x)^{14}}+\langle\cdots 9\cdots\rangle+x\left(\frac{437\,580\,x^{10}}{(1-x)^{14}}+\langle\cdots 15\cdots\rangle+\right.\right.\right.$$
$$x\left(\frac{4\,238\,520\,x^{9}}{(1-x)^{14}}+\langle\cdots 14\cdots\rangle+x\left(\frac{33\,822\,360\,x^{8}}{(1-x)^{14}}+\langle\cdots 13\cdots\rangle+x\left(\frac{201\,389\,760\,x^{7}}{(1-x)^{14}}+\frac{\langle\cdots 1\cdots\rangle}{\langle\cdots 1\cdots\rangle^{15}}+\right.\right.\right.$$
$$\langle\cdots 10\cdots\rangle+14\ \langle\cdots 1\cdots\rangle+x\left(\frac{804\,323\,520\,x^{6}}{(1-x)^{14}}+\langle\cdots 11\cdots\rangle+x\left(\frac{1\,919\,998\,080\,x^{5}}{(1-x)^{14}}+\right.\right.\right.$$
$$\left.\left.\left.\left.\langle\cdots 10\cdots\rangle+x\left(\frac{2\,335\,132\,800\,x^{4}}{\langle\cdots 1\cdots\rangle^{14}}+\langle\cdots 9\cdots\rangle+x\ \langle\cdots 1\cdots\rangle\right)\right)\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[•]:=
```
(5127697*x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[ f(x),x],x],x],
  x],x],x],x],x],x],x],x])/2615348736000
```

```
(5 127 697 * x * D[x *
     D[x * D[x * D[x * D[x * D[x * D[x * D[x * D[x * D[f[x], x], x], x], x], x], x], x], x],
      x], x]) / 2 615 348 736 000
```

Out[•]=

$$\frac{1}{2\,615\,348\,736\,000}\times 5\,127\,697\ x$$
$$\left(\frac{13\,x^{12}}{(1-x)^{14}}+\langle\cdots 10\cdots\rangle+x\left(\frac{79\,872\,x^{11}}{(1-x)^{14}}+\langle\cdots 10\cdots\rangle+x\left(\frac{876\,876\,x^{10}}{(1-x)^{14}}+\langle\cdots 17\cdots\rangle+x\left(\frac{8\,614\,320\,x^{9}}{(1-x)^{14}}+\right.\right.\right.\right.$$
$$\langle\cdots 16\cdots\rangle+x\left(\frac{71\,969\,040\,x^{8}}{(1-x)^{14}}+\frac{\langle\cdots 1\cdots\rangle}{\langle\cdots 1\cdots\rangle^{15}}+\langle\cdots 13\cdots\rangle+9\ \langle\cdots 1\cdots\rangle+x\right.\right.\right.$$
$$\left(\frac{471\,968\,640\,x^{7}}{(1-x)^{14}}+\langle\cdots 14\cdots\rangle+x\left(\frac{2\,214\,051\,840\,x^{6}}{(1-x)^{14}}+\langle\cdots 13\cdots\rangle+x\left(\frac{6\,745\,939\,200\,x^{5}}{(1-x)^{14}}+\right.\right.\right.$$
$$\left.\left.\left.\left.\left.\langle\cdots 12\cdots\rangle+x\left(\frac{11\,935\,123\,200\ \langle\cdots 1\cdots\rangle}{\langle\cdots 1\cdots\rangle^{14}}+\langle\cdots 11\cdots\rangle+x\ \langle\cdots 1\cdots\rangle\right)\right)\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[ ]:=
```
x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[ f(x),x],x],x],x],x],x],x],
 x],x],x],x]
```

```
x*D[
  x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[x*D[f[x], x], x], x], x], x], x], x], x],
    x], x]
```

Out[ ]=

$$x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\cdots 10\cdots+x\left(\frac{79\,872\,x^{11}}{(1-x)^{14}}+\cdots 10\cdots+x\left(\frac{876\,876\,x^{10}}{(1-x)^{14}}+\cdots 17\cdots+x\left(\frac{8\,614\,320\,x^{9}}{(1-x)^{14}}+\cdots 16\cdots+x\left(\frac{71\,969\,040\,x^{8}}{(1-x)^{14}}+\frac{\cdots 1\cdots}{\cdots 1\cdots{}^{15}}+\cdots 13\cdots+9\cdots 1\cdots+x\left(\frac{471\,968\,640\,x^{7}}{(1-x)^{14}}+\cdots 14\cdots+x\left(\frac{2\,214\,051\,840\,x^{6}}{(1-x)^{14}}+\cdots 13\cdots+x\left(\frac{6\,745\,939\,200\,x^{5}}{(1-x)^{14}}+\cdots 12\cdots+x\left(\frac{11\,935\,123\,200\,x^{4}}{(1-x)^{14}}+\frac{300\,765\,104\,640\,x^{5}}{(\cdots 1\cdots)(\cdots 1\cdots)^{15}}+\cdots 9\cdots+35\cdots 1\cdots+x\left(\frac{10\,378\,368\,000\,x^{3}}{(1-x)^{14}}+\frac{363\,242\,880\,000\,x^{4}}{(1-x)^{15}}+\frac{4\,903\,778\,880\,000\,x^{5}}{(1-x)^{16}}+\cdots 7\cdots+\frac{41\,515\,867\,008\,000\,x^{13}}{(1-x)^{24}}+x\left(\frac{3\,113\,510\,400\,x^{2}}{(1-x)^{14}}+\frac{159\,826\,867\,200\,x^{3}}{(1-x)^{15}}+\frac{2\,996\,753\,760\,000\,x^{4}}{(1-x)^{16}}+\frac{28\,768\,836\,096\,000\,x^{5}}{(1-x)^{17}}+\frac{163\,023\,404\,544\,000\,x^{6}}{(1-x)^{18}}+\frac{586\,884\,256\,358\,400\,x^{7}}{(1-x)^{19}}+\frac{1\,393\,850\,108\,851\,200\,x^{8}}{(1-x)^{20}}+\frac{2\,212\,460\,490\,240\,000\,x^{9}}{(1-x)^{21}}+\frac{2\,323\,083\,514\,752\,000\,x^{10}}{(1-x)^{22}}+\frac{1\,548\,722\,343\,168\,000\,x^{11}}{(1-x)^{23}}+\frac{593\,676\,898\,214\,400\,x^{12}}{(1-x)^{24}}+\frac{99\,638\,080\,819\,200\,x^{13}}{(1-x)^{25}}\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[ ]:=
```
(-341 575 * x * D[%18, x]) / 2 615 348 736 000
```

Out[ ]=

$$-\frac{1}{8\,047\,226\,880}\times 1051\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\cdots 11\cdots+x\left(\frac{159\,744\,x^{11}}{(1-x)^{14}}+\cdots 11\cdots+x\left(\frac{1\,755\,468\,x^{10}}{(1-x)^{14}}+\frac{6\,702\,696\,\cdots 1\cdots}{\cdots 1\cdots{}^{15}}+\cdots 17\cdots+2\cdots 1\cdots+x\left(\frac{17\,383\,080\,x^{9}}{(1-x)^{14}}+\cdots 18\cdots+x\left(\frac{149\,497\,920\,x^{8}}{(1-x)^{14}}+\cdots 17\cdots+x\left(\frac{1\,047\,720\,960\,x^{7}}{(1-x)^{14}}+\cdots 16\cdots+x\left(\frac{5\,517\,832\,320\,x^{6}}{(1-x)^{14}}+\cdots 15\cdots+x\left(\frac{20\,030\,250\,240\,x^{5}}{(1-x)^{14}}+\cdots 14\cdots+x\left(\frac{45\,664\,819\,200\,\cdots 1\cdots}{\cdots 1\cdots{}^{14}}+\cdots 13\cdots+x\cdots 1\cdots\right)\right)\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[ ]:=
```
(15755*x*D[x*D[%18,x],x])/2615348736000
```
(15 755 * x * D[x * D[%18, x], x]) / 2 615 348 736 000

Out[ ]=

$$\frac{1}{523\,069\,747\,200} \times 3151\, x \left(\frac{13\, x^{12}}{(1-x)^{14}} + \cdots 12 \cdots + x\left(\frac{319\,488\, x^{11}}{(1-x)^{14}} + \cdots 12 \cdots + x\left(\frac{3\,512\,652\, x^{10}}{(1-x)^{14}} + \cdots 21 \cdots + x\left(\frac{34\,937\,760\, x^{9}}{(1-x)^{14}} + \frac{\cdots 1 \cdots}{\cdots 1 \cdots^{15}} + \cdots 18 \cdots + 5 \cdots 1 \cdots + x\left(\frac{305\,945\,640\, x^{8}}{(1-x)^{14}} + \cdots 19 \cdots + x\left(\frac{2\,243\,704\,320\, x^{7}}{(1-x)^{14}} + \cdots 18 \cdots + x\left(\frac{12\,851\,879\,040\, x^{6}}{(1-x)^{14}} + \cdots 17 \cdots + x\left(\frac{53\,137\,244\,160\, x^{5}}{(1-x)^{14}} + \cdots 16 \cdots + x\left(\frac{145\,816\,070\,400 \cdots 1 \cdots}{\cdots 1 \cdots^{14}} + \cdots 15 \cdots + x \cdots 1 \cdots\right)\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[ ]:=
```
(-450*x*D[x*D[x*D[%18,x],x],x])/2615348736000
```
(-450 * x * D[x * D[x * D[%18, x], x], x]) / 2 615 348 736 000

Out[ ]=

$$-\frac{1}{5\,811\,886\,080}\, x \left(\frac{13\, x^{12}}{(1-x)^{14}} + \cdots 13 \cdots + x\left(\frac{638\,976\, x^{11}}{(1-x)^{14}} + \cdots 13 \cdots + x\left(\frac{7\,027\,020\, x^{10}}{(1-x)^{14}} + \frac{26\,830\,440 \cdots 1 \cdots}{\cdots 1 \cdots^{15}} + \cdots 21 \cdots + 2 \cdots 1 \cdots + x\left(\frac{70\,064\,280\, x^{9}}{(1-x)^{14}} + \cdots 22 \cdots + x\left(\frac{620\,385\,480\, x^{8}}{(1-x)^{14}} + \cdots 21 \cdots + x\left(\frac{4\,691\,269\,440\, x^{7}}{(1-x)^{14}} + \cdots 20 \cdots + x\left(\frac{28\,557\,809\,280\, x^{6}}{(1-x)^{14}} + \cdots 19 \cdots + x\left(\frac{130\,248\,518\,400\, x^{5}}{(1-x)^{14}} + \cdots 18 \cdots + x\left(\frac{411\,502\,291\,200 \cdots 1 \cdots}{\cdots 1 \cdots^{14}} + \cdots 17 \cdots + x \cdots 1 \cdots\right)\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[ ]:=
```
(6*x*D[x*D[x*D[x*D[%18,x],x],x],x])/2615348736000
```
```
(6 * x * D[x * D[x * D[x * D[%18, x], x], x], x]) / 2 615 348 736 000
```

Out[ ]=

$$\frac{1}{435\,891\,456\,000}\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\cdots 14\cdots+x\left(\frac{1\,277\,952\,x^{11}}{(1-x)^{14}}+\cdots 14\cdots+x\left(\frac{14\,055\,756\,x^{10}}{(1-x)^{14}}+\frac{53\,667\,432\,\cdots 1\cdots}{\cdots 1\cdots^{15}}+\cdots 23\cdots+2\,\cdots 1\cdots+x\left(\frac{140\,334\,480\,x^{9}}{(1-x)^{14}}+\cdots 24\cdots+x\left(\frac{1\,250\,964\,000\,x^{8}}{(1-x)^{14}}+\cdots 23\cdots+x\left(\frac{9\,654\,353\,280\,x^{7}}{(1-x)^{14}}+\cdots 22\cdots+x\left(\frac{61\,396\,695\,360\,x^{6}}{(1-x)^{14}}+\frac{859\,553\,735\,040\,x^{7}}{\cdots 1\cdots^{15}}+\cdots 19\cdots+20\left(\cdots 1\cdots\right)+x\left(\frac{301\,595\,374\,080\,x^{5}}{(1-x)^{14}}+\cdots 20\cdots+x\left(\cdots 1\cdots\right)\right)\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[ ]:=
```
%10 + %11 + %12 + %13 + %14 + %15 + %16 + %17 + %19 + %20 + %21 + %22
```

Out[ ]=

$$\frac{1}{2\,615\,348\,736\,000}\left(-\frac{154\,078\,848\,000\,x^{13}}{(1-x)^{14}}+486\,074\,908\,800\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\frac{14\,x^{13}}{(1-x)^{15}}\right)-707\,402\,381\,760\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\frac{14\,x^{13}}{(1-x)^{15}}+x\left(\frac{156\,x^{11}}{(1-x)^{14}}+\frac{364\,x^{12}}{(1-x)^{15}}+\frac{210\,x^{13}}{(1-x)^{16}}\right)\right)\right)+\frac{1}{2\,615\,348\,736\,000}\left(631\,255\,103\,784\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\cdots 2\cdots+x\left(\frac{312\,x^{11}}{(1-x)^{14}}+\cdots 1\cdots+\cdots 1\cdots+x\left(\frac{1716\,x^{10}}{\cdots 1\cdots^{14}}+\cdots 2\cdots+\frac{\cdots 1\cdots}{\cdots 1\cdots^{17}}\right)\right)\right)-\cdots 1\cdots\right)+\frac{1\,368\,374\,183\,x\left(\cdots 1\cdots\right)}{237\,758\,976\,000}+\cdots 9\cdots+\frac{3151\,x\left(\cdots 1\cdots\right)}{523\,069\,747\,200}-\frac{x\left(\frac{13\,x^{12}}{\left(\cdots 1\cdots\right)^{14}}+\cdots 13\cdots+x\left(\cdots 1\cdots\right)\right)}{5\,811\,886\,080}+\frac{1}{435\,891\,456\,000}\,x\left(\frac{13\,x^{12}}{(1-x)^{14}}+\frac{14\,x^{13}}{\cdots 1\cdots^{15}}+\cdots 12\cdots+x\left(\cdots 1\cdots\right)+x\left(\frac{1\,277\,952\,x^{11}}{(1-x)^{14}}+\cdots 14\cdots+x\left(\frac{14\,055\,756\,x^{10}}{(1-x)^{14}}+\cdots 25\cdots+x\left(\frac{140\,334\,480\,x^{9}}{(1-x)^{14}}+\cdots 24\cdots+x\left(\frac{1\,250\,964\,000\,x^{8}}{(1-x)^{14}}+\cdots 23\cdots+x\left(\frac{9\,654\,353\,280\,x^{7}}{(1-x)^{14}}+\cdots 22\cdots+x\left(\frac{61\,396\,695\,360\,\cdots 1\cdots}{\cdots 1\cdots^{14}}+\cdots 21\cdots+x\left(\cdots 1\cdots\right)\right)\right)\right)\right)\right)\right)\right)$$

large output | show less | show more | show all | set size limit...

In[ ]:=
```
FullSimplify[%23]
```

Out[ ]=

$$-\frac{1}{39\,(-1+x)^{29}}x^{13}(3090+x(165\,837+x(3\,196\,632+x(30\,131\,967+x(158\,053\,587+x(494\,273\,208+x(958\,555\,598+x(1\,177\,541\,573+x(923\,581\,373+3x(153\,594\,806+x(47\,984\,060+x(9\,106\,889+x(997\,974+x(58\,009+13x(118+x)))))))))))))$$

In[ ]:= **Expand[**
x^{11} (1 + x) (1 + x (98 + x (3031 + x (41 708 + x (295 111 + x (1 155 650 + x (2 598 191 + x (3 401 660 + x (2 598 191 + x (1 155 650 + x (295 111 + x (41 708 + x (3031 + x (98 + x))))))))))))))]

Out[ ]= $x^{11} + 99\,x^{12} + 3129\,x^{13} + 44\,739\,x^{14} + 336\,819\,x^{15} + 1\,450\,761\,x^{16} + 3\,753\,841\,x^{17} + 5\,999\,851\,x^{18} + 5\,999\,851\,x^{19} + 3\,753\,841\,x^{20} + 1\,450\,761\,x^{21} + 336\,819\,x^{22} + 44\,739\,x^{23} + 3129\,x^{24} + 99\,x^{25} + x^{26}$

In[ ]:= **Series[**
x^2 ($x^{11} + 99\,x^{12} + 3129\,x^{13} + 44\,739\,x^{14} + 336\,819\,x^{15} + 1\,450\,761\,x^{16} + 3\,753\,841\,x^{17} + 5\,999\,851\,x^{18} + 5\,999\,851\,x^{19} + 3\,753\,841\,x^{20} + 1\,450\,761\,x^{21} + 336\,819\,x^{22} + 44\,739\,x^{23} + 3129\,x^{24} + 99\,x^{25} + x^{26}$) / (1 - x) ^29, {x, 0, 20}]

Out[ ]= $x^{13} + 128\,x^{14} + 6435\,x^{15} + 183\,040\,x^{16} + 3\,476\,330\,x^{17} + 48\,542\,208\,x^{18} + 530\,803\,988\,x^{19} + 4\,751\,252\,480\,x^{20} + O[x]^{21}$