```
ClearAll["Global`*"]
```

```
d2[n_, k_] := Sum[ d2[n / j, k - 1], {j, 2, n}]; d2[n_, 0] := 1
d2b[n_, k_, a_] := d2b[n, k, a] = Sum[a d2b[n / (j a), k - 1, a], {j, 2, n / a^k}];
d2b[n_, 0, a_] := 1
d1[n_, k_] := Sum[ d1[n / j, k - 1], {j, 1, n}]; d1[n_, 0] := 1
d1a[n_, k_, a_] := Sum[a d1a[n / j, k - 1, a], {j, a, n / (a^(k - 1)), a}]; d1a[n_, 0, a_] := 1
d1b[n_, k_, a_] := Sum[a d1b[n / (j a), k - 1, a], {j, 1, n / (a^k)}]; d1b[n_, 0, a_] := 1
d2c[n_, k_, a_] := a^k d2[ n a^-k, k]
d22[n_, k_, a_] := a^-k d2b[ n a^k, k, a]
d1c[n_, k_, a_] := a^k d1[ n a^-k, k]
d11[n_, k_, a_] := a^-k d1b[ n a^k, k, a]

d2bb[n_, k_, a_] := d2bb[n, k, a] = Sum[a d2bb[n / (j a), k - 1, a], {j, 1 + 1 / a, n / (a^k)}];
d2bb[n_, 0, a_] := 1
d2bb2[n_, k_, a_] :=
 d2bb2[n, k, a] = Sum[a d2bb2[n / ((j + 1 / a) a), k - 1, a], {j, 1, Floor[n / (a^k) - 1 / a]}];
d2bb2[n_, 0, a_] := 1
d2ap[n_, j_] := (-1)^j (1 - (Gamma[j, -Log[n]]) / Gamma[j])
dh[n_, k_, a_] :=
 Sum[Binomial[k, j] dh[n / (m^(k - j)), j, m + 1], {m, a, n^(1 / k)}, {j, 0, k - 1}]
dh[n_, 1, a_] := Floor[n] - a + 1; dh[n_, 0, a_] := 1

fe[n_, k_, a_] := (1 / (a^k)) (dh[n * (a^k), k, a + 1])
d2bbalt2[n_, k_, a_] := (a^k) (dh[n * (a^-k), k, (1 / a) + 1])
lin[n_, a_] := Sum[ (-1)^(k + 1) / k fe[n, k, a], {k, 1, 100}]

Table[{n, aa = d1b[n, k = 3, a = 1 / 3], bb = ( a^k) d1[n / ( a^k), k], aa - bb}, {n, 1, 60}] //
 TableForm
```

1	$\frac{76}{9}$	$\frac{76}{9}$	0
2	$\frac{208}{9}$	$\frac{208}{9}$	0
3	$\frac{1099}{27}$	$\frac{1099}{27}$	0
4	$\frac{1633}{27}$	$\frac{1633}{27}$	0
5	$\frac{2186}{27}$	$\frac{2186}{27}$	0
6	$\frac{2810}{27}$	$\frac{2810}{27}$	0
7	$\frac{3413}{27}$	$\frac{3413}{27}$	0
8	$\frac{458}{3}$	$\frac{458}{3}$	0
9	$\frac{1598}{9}$	$\frac{1598}{9}$	0
10	$\frac{1835}{9}$	$\frac{1835}{9}$	0
11	$\frac{2069}{9}$	$\frac{2069}{9}$	0
12	$\frac{2332}{9}$	$\frac{2332}{9}$	0
13	$\frac{7711}{27}$	$\frac{7711}{27}$	0
14	$\frac{8518}{27}$	$\frac{8518}{27}$	0
15	$\frac{9295}{27}$	$\frac{9295}{27}$	0
16	$\frac{10\,153}{27}$	$\frac{10\,153}{27}$	0

17	$\frac{10\,903}{27}$	$\frac{10\,903}{27}$	0
18	$\frac{11\,791}{27}$	$\frac{11\,791}{27}$	0
19	$\frac{12\,629}{27}$	$\frac{12\,629}{27}$	0
20	$\frac{13\,517}{27}$	$\frac{13\,517}{27}$	0
21	$\frac{14\,303}{27}$	$\frac{14\,303}{27}$	0
22	$\frac{15\,212}{27}$	$\frac{15\,212}{27}$	0
23	$\frac{16\,070}{27}$	$\frac{16\,070}{27}$	0
24	$\frac{17\,042}{27}$	$\frac{17\,042}{27}$	0
25	$\frac{17\,927}{27}$	$\frac{17\,927}{27}$	0
26	$\frac{18\,833}{27}$	$\frac{18\,833}{27}$	0
27	$\frac{6592}{9}$	$\frac{6592}{9}$	0
28	$\frac{6908}{9}$	$\frac{6908}{9}$	0
29	$\frac{7202}{9}$	$\frac{7202}{9}$	0
30	$\frac{2509}{3}$	$\frac{2509}{3}$	0
31	$\frac{7820}{9}$	$\frac{7820}{9}$	0
32	$\frac{8183}{9}$	$\frac{8183}{9}$	0
33	$\frac{8477}{9}$	$\frac{8477}{9}$	0
34	$\frac{8804}{9}$	$\frac{8804}{9}$	0
35	$\frac{3046}{3}$	$\frac{3046}{3}$	0
36	$\frac{9482}{9}$	$\frac{9482}{9}$	0
37	$\frac{9775}{9}$	$\frac{9775}{9}$	0
38	$\frac{30\,451}{27}$	$\frac{30\,451}{27}$	0
39	$\frac{31\,381}{27}$	$\frac{31\,381}{27}$	0
40	$\frac{32\,536}{27}$	$\frac{32\,536}{27}$	0
41	$\frac{33\,460}{27}$	$\frac{33\,460}{27}$	0
42	$\frac{34\,489}{27}$	$\frac{34\,489}{27}$	0
43	$\frac{35\,533}{27}$	$\frac{35\,533}{27}$	0
44	$\frac{36\,571}{27}$	$\frac{36\,571}{27}$	0
45	$\frac{37\,531}{27}$	$\frac{37\,531}{27}$	0
46	$\frac{38\,629}{27}$	$\frac{38\,629}{27}$	0
47	$\frac{39\,667}{27}$	$\frac{39\,667}{27}$	0
48	$\frac{40\,825}{27}$	$\frac{40\,825}{27}$	0
49	$\frac{41\,842}{27}$	$\frac{41\,842}{27}$	0
50	$\frac{42\,947}{27}$	$\frac{42\,947}{27}$	0
51	$\frac{43\,940}{27}$	$\frac{43\,940}{27}$	0
52	$\frac{45\,101}{27}$	$\frac{45\,101}{27}$	0
53	$\frac{46\,106}{27}$	$\frac{46\,106}{27}$	0
54	$\frac{47\,273}{27}$	$\frac{47\,273}{27}$	0
55	$\frac{48\,323}{27}$	$\frac{48\,323}{27}$	0

56	$\frac{49\,493}{27}$	$\frac{49\,493}{27}$	0
57	$\frac{50\,468}{27}$	$\frac{50\,468}{27}$	0
58	$\frac{51\,626}{27}$	$\frac{51\,626}{27}$	0
59	$\frac{52\,664}{27}$	$\frac{52\,664}{27}$	0
60	$\frac{53\,912}{27}$	$\frac{53\,912}{27}$	0

```
N[Table[{n, aa = d1b[n, k = 2, a = 1 / 10], bb = (a^k) d1[n / (a^k), k], aa - bb}, {n, 50, 60}] //
  TableForm]
```

50.	433.76	433.76	0.
51.	443.41	443.41	0.
52.	453.08	453.08	0.
53.	462.7	462.7	0.
54.	472.65	472.65	0.
55.	482.28	482.28	0.
56.	492.12	492.12	0.
57.	501.99	501.99	0.
58.	511.74	511.74	0.
59.	521.46	521.46	0.
60.	531.41	531.41	0.

```
N[Table[{n, aa = d1a[n (a^k), k = 2, a = 1 / 4] / (a^k), bb = d1[n, k], aa - bb}, {n, 1, 50}] //
  TableForm]
```

1.	8.	1.	7.
2.	3.	3.	0.
3.	5.	5.	0.
4.	8.	8.	0.
5.	10.	10.	0.
6.	14.	14.	0.
7.	16.	16.	0.
8.	20.	20.	0.
9.	23.	23.	0.
10.	27.	27.	0.
11.	29.	29.	0.
12.	35.	35.	0.
13.	37.	37.	0.
14.	41.	41.	0.
15.	45.	45.	0.
16.	50.	50.	0.
17.	52.	52.	0.
18.	58.	58.	0.
19.	60.	60.	0.
20.	66.	66.	0.
21.	70.	70.	0.
22.	74.	74.	0.
23.	76.	76.	0.
24.	84.	84.	0.
25.	87.	87.	0.
26.	91.	91.	0.
27.	95.	95.	0.
28.	101.	101.	0.
29.	103.	103.	0.
30.	111.	111.	0.
31.	113.	113.	0.
32.	119.	119.	0.
33.	123.	123.	0.
34.	127.	127.	0.
35.	131.	131.	0.
36.	140.	140.	0.
37.	142.	142.	0.
38.	146.	146.	0.
39.	150.	150.	0.
40.	158.	158.	0.
41.	160.	160.	0.
42.	168.	168.	0.
43.	170.	170.	0.
44.	176.	176.	0.
45.	182.	182.	0.
46.	186.	186.	0.
47.	188.	188.	0.
48.	198.	198.	0.
49.	201.	201.	0.
50.	207.	207.	0.

```
Table[{n, aa = (d1a[n, k = 2, a = .27] - d1a[n - 1, k, a]), bb =
    ((a^k) d1[n / (a^k), k] - (a^k) d1[(n - 1) / (a^k), k]), aa - bb}, {n, 1, 40}] // TableForm
```

1	2.6973	2.6973	1.33227×10^{-15}
2	4.2282	4.2282	-4.44089×10^{-15}
3	4.7385	4.7385	1.06581×10^{-14}
4	4.8843	4.8843	3.55271×10^{-15}
5	5.3217	5.3217	7.10543×10^{-15}
6	5.6133	5.6133	-3.55271×10^{-15}
7	5.9778	5.9778	-7.10543×10^{-14}
8	5.1759	5.1759	-1.20792×10^{-13}
9	6.0507	6.0507	0.
10	6.1236	6.1236	-1.42109×10^{-14}
11	6.0507	6.0507	-1.42109×10^{-14}
12	6.1236	6.1236	0.
13	6.3423	6.3423	5.18696×10^{-13}
14	6.9984	6.9984	-8.52651×10^{-14}
15	5.7591	5.7591	1.42109×10^{-14}
16	6.4152	6.4152	8.52651×10^{-14}
17	6.7797	6.7797	4.26326×10^{-14}
18	6.561	6.561	-1.42109×10^{-14}
19	6.9255	6.9255	1.42109×10^{-14}
20	6.7068	6.7068	1.42109×10^{-14}
21	7.4358	7.4358	-4.26326×10^{-14}
22	6.1965	6.1965	2.84217×10^{-14}
23	6.9984	6.9984	0.
24	6.6339	6.6339	2.84217×10^{-13}
25	7.1442	7.1442	6.25278×10^{-13}
26	6.7068	6.7068	3.41061×10^{-13}
27	7.3629	7.3629	-1.98952×10^{-13}
28	7.4358	7.4358	-1.13687×10^{-13}
29	6.561	6.561	0.
30	7.2171	7.2171	1.7053×10^{-13}
31	7.4358	7.4358	2.84217×10^{-14}
32	6.7068	6.7068	5.68434×10^{-14}
33	7.6545	7.6545	2.84217×10^{-14}
34	7.29	7.29	1.13687×10^{-13}
35	8.019	8.019	2.84217×10^{-14}
36	6.1965	6.1965	8.52651×10^{-14}
37	7.8732	7.8732	5.68434×10^{-14}
38	7.29	7.29	1.13687×10^{-13}
39	7.3629	7.3629	8.52651×10^{-14}
40	7.29	7.29	8.52651×10^{-14}

```
Table[{n, Floor[5 / n * 3] / 9, d1as[5, 1 / 3, n]}, {n, 1 / 3, 15, 1 / 3}] // TableForm
```

$\frac{1}{3}$	5	5
$\frac{2}{3}$	$\frac{22}{9}$	$\frac{22}{9}$
1	$\frac{5}{3}$	$\frac{5}{3}$
$\frac{4}{3}$	$\frac{11}{9}$	$\frac{11}{9}$

$\frac{5}{3}$	1	1
2	$\frac{7}{9}$	$\frac{7}{9}$
$\frac{7}{3}$	$\frac{2}{3}$	$\frac{2}{3}$
$\frac{8}{3}$	$\frac{5}{9}$	$\frac{5}{9}$
3	$\frac{5}{9}$	$\frac{5}{9}$
$\frac{10}{3}$	$\frac{4}{9}$	$\frac{4}{9}$
$\frac{11}{3}$	$\frac{4}{9}$	$\frac{4}{9}$
4	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{13}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{14}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
5	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{16}{3}$	$\frac{2}{9}$	$\frac{2}{9}$
$\frac{17}{3}$	$\frac{2}{9}$	$\frac{2}{9}$
6	$\frac{2}{9}$	$\frac{2}{9}$
$\frac{19}{3}$	$\frac{2}{9}$	$\frac{2}{9}$
$\frac{20}{3}$	$\frac{2}{9}$	$\frac{2}{9}$
7	$\frac{2}{9}$	$\frac{2}{9}$
$\frac{22}{3}$	$\frac{2}{9}$	$\frac{2}{9}$
$\frac{23}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
8	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{25}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{26}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
9	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{28}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{29}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
10	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{31}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{32}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
11	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{34}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{35}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
12	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{37}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{38}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
13	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{40}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{41}{3}$	$\frac{1}{9}$	$\frac{1}{9}$
14	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{43}{3}$	$\frac{1}{9}$	$\frac{1}{9}$

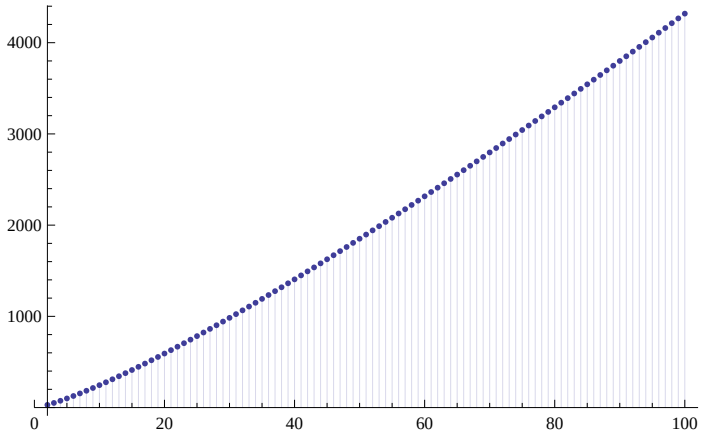
$-\frac{44}{3}$	$-\frac{1}{9}$	$-\frac{1}{9}$
15	$\frac{1}{9}$	$\frac{1}{9}$

```
Table[{n, aa = d2b[n, k = 3, a = .6], bb = (a^k) d2[n / (a^k), k], aa - bb}, {n, 1, 60}] //
 TableForm
```

1	0.	0.	0.
2	0.216	0.216	0.
3	0.864	0.864	0.
4	2.16	2.16	0.
5	2.808	2.808	4.44089×10^{-16}
6	4.968	4.968	0.
7	8.208	8.208	0.
8	10.8	10.8	-5.32907×10^{-15}
9	12.744	12.744	-5.32907×10^{-15}
10	15.336	15.336	-5.32907×10^{-15}
11	19.872	19.872	0.
12	22.464	22.464	0.
13	28.944	28.944	0.
14	31.752	31.752	-3.55271×10^{-15}
15	33.696	33.696	0.
16	40.824	40.824	7.10543×10^{-15}
17	43.416	43.416	7.10543×10^{-15}
18	47.952	47.952	7.10543×10^{-15}
19	52.488	52.488	7.10543×10^{-15}
20	59.616	59.616	7.10543×10^{-15}
21	66.096	66.096	-7.10543×10^{-14}
22	69.984	69.984	-8.52651×10^{-14}
23	74.52	74.52	-9.9476×10^{-14}
24	81.648	81.648	-1.13687×10^{-13}
25	86.832	86.832	-1.13687×10^{-13}
26	97.848	97.848	-1.27898×10^{-13}
27	98.712	98.712	-1.42109×10^{-13}
28	106.488	106.488	-1.27898×10^{-13}
29	112.32	112.32	-1.13687×10^{-13}
30	117.504	117.504	-1.27898×10^{-13}
31	122.04	122.04	-1.42109×10^{-13}
32	133.704	133.704	5.68434×10^{-14}
33	140.184	140.184	5.68434×10^{-14}
34	146.664	146.664	8.52651×10^{-14}
35	157.032	157.032	8.52651×10^{-14}
36	158.976	158.976	8.52651×10^{-14}
37	170.64	170.64	8.52651×10^{-14}
38	173.232	173.232	5.68434×10^{-14}
39	189.432	189.432	1.13687×10^{-13}
40	192.672	192.672	8.52651×10^{-14}
41	196.56	196.56	8.52651×10^{-14}
42	207.576	207.576	1.42109×10^{-13}
43	216.	216.	5.68434×10^{-14}
44	221.832	221.832	1.13687×10^{-13}

45	230.904	230.904	8.52651×10^{-14}
46	239.328	239.328	1.13687×10^{-13}
47	251.208	251.208	8.52651×10^{-14}
48	257.04	257.04	5.68434×10^{-14}
49	266.112	266.112	3.41061×10^{-13}
50	273.24	273.24	2.84217×10^{-13}
51	280.368	280.368	2.84217×10^{-13}
52	298.512	298.512	2.27374×10^{-13}
53	301.752	301.752	2.84217×10^{-13}
54	306.936	306.936	3.97904×10^{-13}
55	319.248	319.248	4.54747×10^{-13}
56	326.376	326.376	5.11591×10^{-13}
57	331.56	331.56	5.11591×10^{-13}
58	343.224	343.224	5.11591×10^{-13}
59	358.128	358.128	6.25278×10^{-13}
60	363.312	363.312	5.11591×10^{-13}

```
DiscretePlot[d2b[n, 3, 1 / 10], {n, 2, 100}]
```




```
d2c[100, 3, 2]
```

32

```
d2b[100, 3, 2]
```

32

```
d22[100, 2, 3]
```

283

```
1 / (3^3)
```

$$\frac{1}{27}$$

```
3^-3
```

$$\frac{1}{27}$$

```
d11[100, 3, .3]
```

1471.

```
d1[100, 3]
```

1471

```
3^(-3)
```

$$\frac{1}{27}$$

```
3^-3
```

$$\frac{1}{27}$$

```
d2b[n, 2, a]
```

```
ss[n_, a_] := a^2 - 2 n + n HarmonicNumber[n/a^2]
```

```
N[ss[100, 3]]
```

111.949

```
ss[n_, a_] := a^2 Sum[ 1, {j, 2, Floor[n a^-2]}, {k, 2, Floor[n / (j a^2)]}]
```

```
ss[1100, 4]
```

2640

```
d2b[1100, 2, 4]
```

2640

```
Limit[ss[n, a], {a → 0}]
```

$$\left\{\text{Limit}\left[a^2 \sum_{j=2}^{\text{Floor}\left[\frac{n}{a^2}\right]} \sum_{k=2}^{\text{Floor}\left[\frac{n}{a^2 j}\right]} 1,\ a \to 0\right]\right\}$$

```
s2[n_, a_] := a Sum[ 1, {j, 2, Floor[n a^-1]}]
Limit[s2[n, a], {a → 0}]
```

$$\left\{\text{Limit}\left[a\left(-1+\text{Floor}\left[\frac{n}{a}\right]\right),\ a \to 0\right]\right\}$$

```
N[s2[100, 1 / 32]]
```

99.9688

```
N[ss[100, 1 / 128]]
```

1246.37

```
N[d2bb[100, 2, 1 / 80]]
```

360.287

```
d2bb2[100, 2, 1 / 2]
```

318

```
N[d2bb[100, 2, 1 / 3]]
```

331.667

```
N[d2ap[100, 2]]
```

$361.517 - 4.41506 \times 10^{-14}\ i$

```
N[d2ap[100, 3]]
```

$698.863 - 1.71417 \times 10^{-13}\ i$

```
N[d2bb[100, 3, 1]]
```

324.

```
N[d2bb[100, 3, 1 / 2]]
```

475.25

```
N[d2bb[100, 3, 1 / 4]]
```

575.656

```
N[d2bb[100, 3, 1 / 8]]
```

634.17

```
N[d2bb[100, 3, 1 / 16]]
```

665.794

```
Table[{n, d2bb2[n, 2, 1 / 2], d2bb2[ n, 2, 1]}, {n, 2, 50}] // TableForm
```

2	0	0
3	$\frac{3}{4}$	0
4	$\frac{3}{2}$	1
5	$\frac{5}{2}$	1
6	4	3
7	$\frac{21}{4}$	3
8	$\frac{27}{4}$	5
9	9	6
10	$\frac{21}{2}$	8
11	12	8
12	$\frac{29}{2}$	12
13	$\frac{65}{4}$	12
14	$\frac{75}{4}$	14
15	$\frac{85}{4}$	16
16	23	19

17	25	19
18	$\frac{57}{2}$	23
19	30	23
20	33	27
21	$\frac{143}{4}$	29
22	$\frac{151}{4}$	31
23	$\frac{163}{4}$	31
24	$\frac{175}{4}$	37
25	$\frac{93}{2}$	38
26	$\frac{97}{2}$	40
27	52	42
28	55	46
29	57	46
30	$\frac{123}{2}$	52
31	$\frac{251}{4}$	52
32	$\frac{265}{4}$	56
33	$\frac{279}{4}$	58
34	$\frac{291}{4}$	60
35	$\frac{303}{4}$	62
36	$\frac{159}{2}$	69
37	$\frac{163}{2}$	69
38	$\frac{169}{2}$	71
39	89	73
40	$\frac{183}{2}$	79
41	94	79
42	$\frac{197}{2}$	85
43	$\frac{405}{4}$	85
44	$\frac{419}{4}$	89
45	$\frac{435}{4}$	93
46	$\frac{445}{4}$	95
47	$\frac{455}{4}$	95
48	$\frac{475}{4}$	103
49	$\frac{243}{2}$	104
50	$\frac{251}{2}$	108

```
Table[{j, a d2bb[n / (j a), k - 1, a]}, {j, 1 + 1 / a, n / (a^k)}] /.
  {n → 5, k → 2, a → 3 / 5} // TableForm
```

Table::iterb : Iterator $\left\{j, 1+\frac{1}{a}, a^{-k} n\right\}$ does not have appropriate bounds. ≫

Table::iterb : Iterator $\left\{j, 1+\frac{1}{a}, a^{-k} n\right\}$ does not have appropriate bounds. ≫

$\frac{8}{3}$	$\frac{27}{25}$
$\frac{11}{3}$	$\frac{18}{25}$
$\frac{14}{3}$	$\frac{9}{25}$
$\frac{17}{3}$	0
$\frac{20}{3}$	0
$\frac{23}{3}$	0
$\frac{26}{3}$	0
$\frac{29}{3}$	0
$\frac{32}{3}$	0
$\frac{35}{3}$	0
$\frac{38}{3}$	0
$\frac{41}{3}$	0

```
N[d2bb[5, 2, 1 / 2]]
```

2.5

```
(1 / 4) (d2[20, 2] - 2 d2[10, 1] + d2[5, 0])
```

$\frac{5}{2}$

```
d2[20, 2]
```

27

```
d2[20, 1]
```

19

```
N[d2bb[25, 2, 1 / 2]]
```

46.5

```
N[(1 / 4) (d2[25 * 4, 2] - 2 d2[25 * 2, 1] + d2[25, 0])]
```

46.5

```
N[d2bb[25, 3, 1 / 2]]
```

40.5

```
N[(1 / 8) (d2[25 * 8, 3] - 3 d2[25 * 4, 2] + 3 d2[25 * 2, 1] - d2[25, 0])]
```

40.5

```
N[(1 / 8) (dh[25 * 8, 3, 3])]
```

40.5

```
N[d2bb[10, 2, 1 / 3]]
```

11.5556

```
N[(1 / 9) (d2[10 * 9, 2] - 2 d2[10 * 3, 1] + d2[10, 0])]
```

21.

```
N[(1 / 8) (dh[25 * 8, 3, 2] - 3 dh[25 * 4, 2, 2] + 3 dh[25 * 2, 1, 2] - dh[25, 0, 2])]
```

40.5

```
N[d2bb[10, 3, 1 / 3]]
```

6.77778

```
N[(1 / 27) (dh[10 * 27, 3, 4])]
```

6.77778

```
N[d2bb[10, 2, 1 / 3]]
```

11.5556

```
N[(1 / 9) (dh[10 * 9, 2, 4])]
```

11.5556

```
N[d2bb[100, 4, 1 / 3]]
```

556.296

```
N[(1 / 81) (dh[100 * 81, 4, 4])]
```

556.296

```
N[d2bb[100, 4, 1 / 6]]
```

721.063

```
N[(1 / (6^4)) (dh[100 * (6^4), 4, 7])]
```

721.063

```
N[d2ap[100, 2]]
```

$361.517 - 4.41506 \times 10^{-14}\ i$

```
N[fe[100, 2, 2265]]
```

361.473

```
N[d2ap[100, 3]]
```

$698.863 - 1.71417 \times 10^{-13}\ i$

```
fe[100, 3, 165]
```

695.583

```
N[d2ap[100, 4]]
```

$928.88 - 3.40898 \times 10^{-13}\, i$

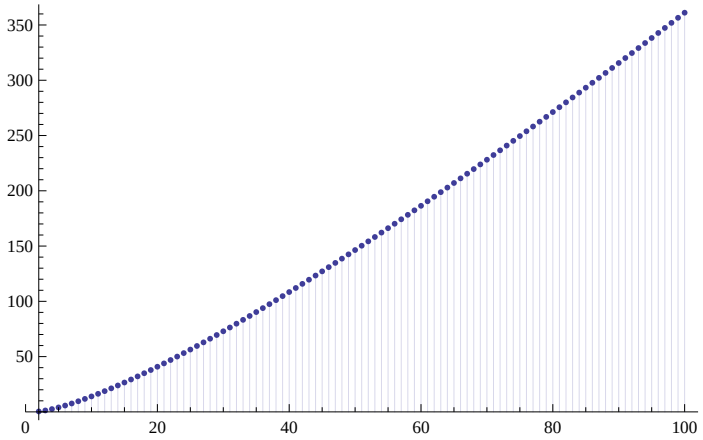
```
fe[100, 4, 75]
```

910.402

```
fe[100, 2, 1]
```

283.

```
DiscretePlot[fe[n, 2, 240], {n, 2, 100}]
```



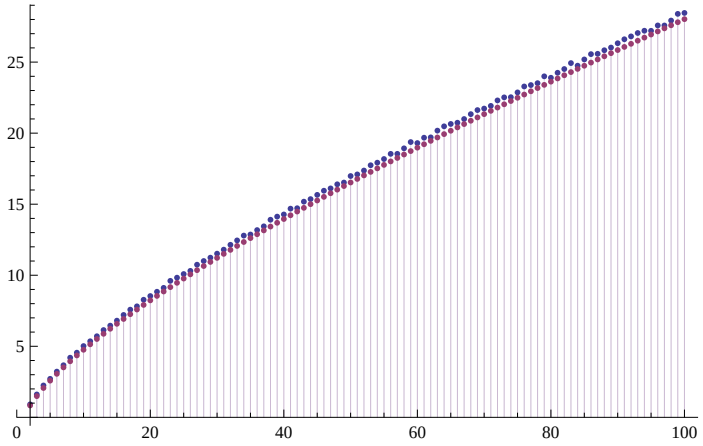

```
100 × 240^2
```

5 760 000

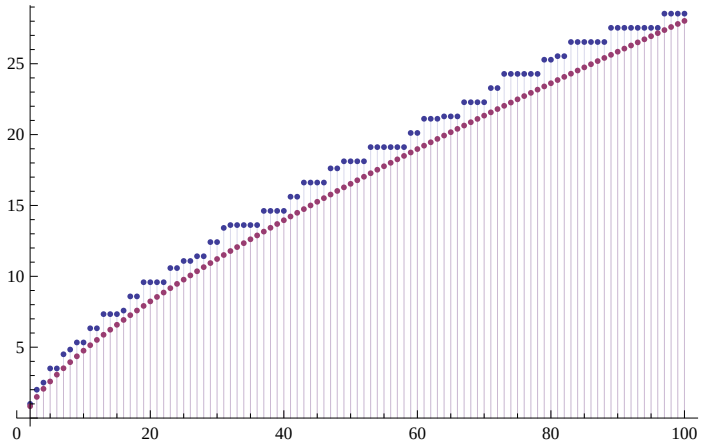
```
N[1 / 240]
```

0.00416667

```
DiscretePlot[{lin[n, 4], LogIntegral[n] - Log[Log[n]] - EulerGamma}, {n, 2, 100}]
```



```
DiscretePlot[{lin[n, 1], LogIntegral[n] - Log[Log[n]] - EulerGamma}, {n, 2, 100}]
```




```
DiscretePlot[{lin[n, 10], LogIntegral[n] - Log[Log[n]] - EulerGamma}, {n, 2, 100}]
```

```
$Aborted
```

```
d2bbalt2[100, 3, 1 / 2]
```

$$\frac{1901}{4}$$

```
d2bbalt[100, 3, 1 / 2]
```

$$\frac{1901}{4}$$

```
d2bb2[100, 3, 1 / 2]
```

$$\frac{1901}{4}$$

```
FullSimplify[(1 / ((1 / a)^k)) (dhf[n * ((1 / a)^k), k, (1 / a) + 1])]
```

$$\left(\frac{1}{a}\right)^{-k} \text{dhf}\left[\left(\frac{1}{a}\right)^{k} n, k, 1+\frac{1}{a}\right]$$

$$\left(\frac{1}{a}\right)^{-k}$$

$$\left(\frac{1}{a}\right)^{-k}$$

```
FullSimplify[(a^-1)^-k]
```

$$\left(\frac{1}{a}\right)^{-k}$$

```
(1 / 7)^-3
```

```
343
```

```
7^3
```

```
343
```

```
Plot[{0, x / Log[x + 1]}, {x, 0, 50}]
```