```
RiePrimeCnt[n_] := Sum[PrimePi[n^(1/j)]/j, {j, 1, Log[2, n]}]
Dhyp[n_, k_, a_] :=
 Sum[Binomial[k-1, j] Dhyp[n/(m^(k-j)), j, m+1], {m, a, n^(1/k)}, {j, 0, k-2}]
Dhyp[n_, 1, a_] := Floor[n] - a + 1; Dhyp[n_, 0, a_] := 1
LinnikSumHyp[n_] := Sum[(-1)^(k+1)/k Dhyp[n, k, 2], {k, 1, Log[2, n]}]
Table[{n, RiePrimeCnt[n], LinnikSumHyp[n]}, {n, 1, 100}] // TableForm
```

1	0	0
2	1	1
3	2	2
4	$\frac{5}{2}$	$\frac{5}{2}$
5	$\frac{7}{2}$	$\frac{7}{2}$
6	$\frac{7}{2}$	$\frac{9}{2}$
7	$\frac{9}{2}$	$\frac{11}{2}$
8	$\frac{29}{6}$	$\frac{41}{6}$
9	$\frac{16}{3}$	$\frac{22}{3}$
10	$\frac{16}{3}$	$\frac{25}{3}$
11	$\frac{19}{3}$	$\frac{28}{3}$
12	$\frac{19}{3}$	11
13	$\frac{22}{3}$	12
14	$\frac{22}{3}$	13
15	$\frac{22}{3}$	14
16	$\frac{91}{12}$	$\frac{179}{12}$
17	$\frac{103}{12}$	$\frac{191}{12}$
18	$\frac{103}{12}$	$\frac{203}{12}$
19	$\frac{115}{12}$	$\frac{215}{12}$
20	$\frac{115}{12}$	$\frac{235}{12}$
21	$\frac{115}{12}$	$\frac{247}{12}$
22	$\frac{115}{12}$	$\frac{259}{12}$
23	$\frac{127}{12}$	$\frac{271}{12}$
24	$\frac{127}{12}$	$\frac{47}{2}$
25	$\frac{133}{12}$	24
26	$\frac{133}{12}$	25
27	$\frac{137}{12}$	$\frac{79}{3}$
28	$\frac{137}{12}$	28
29	$\frac{149}{12}$	29
30	$\frac{149}{12}$	30
31	$\frac{161}{12}$	31
32	$\frac{817}{60}$	$\frac{1927}{60}$
33	$\frac{817}{60}$	$\frac{1987}{60}$
34	$\frac{817}{60}$	$\frac{2047}{60}$

35	$\frac{817}{60}$	$\frac{2107}{60}$
36	$\frac{817}{60}$	$\frac{181}{5}$
37	$\frac{877}{60}$	$\frac{186}{5}$
38	$\frac{877}{60}$	$\frac{191}{5}$
39	$\frac{877}{60}$	$\frac{196}{5}$
40	$\frac{877}{60}$	$\frac{2407}{60}$
41	$\frac{937}{60}$	$\frac{2467}{60}$
42	$\frac{937}{60}$	$\frac{2527}{60}$
43	$\frac{997}{60}$	$\frac{2587}{60}$
44	$\frac{997}{60}$	$\frac{2687}{60}$
45	$\frac{997}{60}$	$\frac{929}{20}$
46	$\frac{997}{60}$	$\frac{949}{20}$
47	$\frac{1057}{60}$	$\frac{969}{20}$
48	$\frac{1057}{60}$	$\frac{301}{6}$
49	$\frac{1087}{60}$	$\frac{152}{3}$
50	$\frac{1087}{60}$	$\frac{155}{3}$
51	$\frac{1087}{60}$	$\frac{158}{3}$
52	$\frac{1087}{60}$	$\frac{163}{3}$
53	$\frac{1147}{60}$	$\frac{166}{3}$
54	$\frac{1147}{60}$	57
55	$\frac{1147}{60}$	58
56	$\frac{1147}{60}$	$\frac{707}{12}$
57	$\frac{1147}{60}$	$\frac{719}{12}$
58	$\frac{1147}{60}$	$\frac{731}{12}$
59	$\frac{1207}{60}$	$\frac{743}{12}$
60	$\frac{1207}{60}$	$\frac{763}{12}$
61	$\frac{1267}{60}$	$\frac{775}{12}$
62	$\frac{1267}{60}$	$\frac{787}{12}$
63	$\frac{1267}{60}$	$\frac{269}{4}$
64	$\frac{1277}{60}$	$\frac{4073}{60}$
65	$\frac{1277}{60}$	$\frac{4133}{60}$
66	$\frac{1277}{60}$	$\frac{4193}{60}$
67	$\frac{1337}{60}$	$\frac{4253}{60}$
68	$\frac{1337}{60}$	$\frac{1451}{20}$
69	$\frac{1337}{60}$	$\frac{1471}{20}$
70	$\frac{1337}{60}$	$\frac{1491}{20}$
71	$\frac{1397}{60}$	$\frac{1511}{20}$
72	$\frac{1397}{60}$	$\frac{235}{3}$
73	$\frac{1457}{60}$	$\frac{238}{3}$

74	$\frac{1457}{60}$	$\frac{241}{3}$
75	$\frac{1457}{60}$	$\frac{244}{3}$
76	$\frac{1457}{60}$	83
77	$\frac{1457}{60}$	84
78	$\frac{1457}{60}$	85
79	$\frac{1517}{60}$	86
80	$\frac{1517}{60}$	$\frac{5303}{60}$
81	$\frac{383}{15}$	$\frac{893}{10}$
82	$\frac{383}{15}$	$\frac{903}{10}$
83	$\frac{398}{15}$	$\frac{913}{10}$
84	$\frac{398}{15}$	$\frac{2789}{30}$
85	$\frac{398}{15}$	$\frac{2819}{30}$
86	$\frac{398}{15}$	$\frac{2849}{30}$
87	$\frac{398}{15}$	$\frac{2879}{30}$
88	$\frac{398}{15}$	$\frac{5813}{60}$
89	$\frac{413}{15}$	$\frac{5873}{60}$
90	$\frac{413}{15}$	$\frac{1991}{20}$
91	$\frac{413}{15}$	$\frac{2011}{20}$
92	$\frac{413}{15}$	$\frac{6133}{60}$
93	$\frac{413}{15}$	$\frac{6193}{60}$
94	$\frac{413}{15}$	$\frac{6253}{60}$
95	$\frac{413}{15}$	$\frac{6313}{60}$
96	$\frac{413}{15}$	$\frac{3203}{30}$
97	$\frac{428}{15}$	$\frac{3233}{30}$
98	$\frac{428}{15}$	$\frac{3263}{30}$
99	$\frac{428}{15}$	$\frac{3313}{30}$
100	$\frac{428}{15}$	$\frac{2217}{20}$

```
Dhyp[1000, 5, 1]
```

8863

```
Binomial[5, 5] Dhyp[1000, 5, 2] + Binomial[5, 4] Dhyp[1000, 4, 2] +
 Binomial[5, 3] Dhyp[1000, 3, 2] + Binomial[5, 2] Dhyp[1000, 2, 2] +
 Binomial[5, 1] Dhyp[1000, 1, 2] + Binomial[5, 0] Dhyp[1000, 0, 2]
```

18 897

```
D2[n_, k_] := Sum[D2[Floor[n / j], k - 1], {j, 2, n}]; D2[n_, 0] := 1
DD[n_, k_] := Sum[DD[Floor[n / j], k - 1], {j, 1, n}]; DD[n_, 0] := 1
D2Alt[n_, k_] := Sum[(-1) ^ (k - j) Binomial[k, j] DD[n, j], {j, 0, k}]
DDAlt[n_, k_] := Sum[Binomial[k, j] D2[n, j], {j, 0, k}]
```

```
DDAlt[1000, 5]
```

248 228