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

```
str := 2
K[n_] := If[ n == 1, 0, FullSimplify[MangoldtLambda[n] / Log[n]]]
K2[n_] := If[Floor[n^(1 / str)] == n^(1 / str), K[n^(1 / str)], 0]
K7[n_] := If[n == 1, 0, K2[n] - If[ Floor[Log[2, n]] == Log[2, n], n^(1 / str) / Log[2, n], 0]]
linadd[n_] := Sum[ (2^(1 / str))^k / k, {k, 1, Log[2, n]}]
p[n_, k_] := Sum[ If[K7[j] == 0, 0, K7[j] p[n / j, k - 1]], {j, Divisors[n]}];
p[n_, 1] := K7[n]
p[n_, 0] := 1
d1[n_, z_] := d1[n, z] = Sum[ (z^k) / (k!) p[n, k], {k, 0, Log[2, n]}]
D1[n_, z_] := Sum[ d1[j, z], {j, 1, n}]
lin[n_] := Sum[ (-1)^(k + 1) / k D1[n, k], {k, 1, Log[2, n]}]
```

```
p[16, 1]
```

$$-\frac{1}{2}$$

```
Table[{n, p[n, 1], p[n, 2], p[n, 3], p[n, 4], p[n, 5],
   d1[n, 1], D1[n, 1], N[lin[n] + linadd[n]]}, {n, 1, 100}] // TableForm
```

1	0	0	0	0	0	1	1	0.
2	$-\sqrt{2}$	0	0	0	0	$1-\sqrt{2}$	$2-\sqrt{2}$	2.
3	0	0	0	0	0	1	$3-\sqrt{2}$	3.
4	0	2	0	0	0	2	$5-\sqrt{2}$	3.41421
5	0	0	0	0	0	1	$6-\sqrt{2}$	3.91421
6	0	0	0	0	0	1	$7-\sqrt{2}$	4.41421
7	0	0	0	0	0	1	$8-\sqrt{2}$	4.91421
8	$-\frac{2\sqrt{2}}{3}$	0	$-2\sqrt{2}$	0	0	$1-\sqrt{2}$	$9-2\sqrt{2}$	6.83824
9	1	0	0	0	0	2	$11-2\sqrt{2}$	8.67157
10	0	0	0	0	0	1	$12-2\sqrt{2}$	9.50491
11	0	0	0	0	0	1	$13-2\sqrt{2}$	10.3382
12	0	0	0	0	0	1	$14-2\sqrt{2}$	11.1716
13	0	0	0	0	0	1	$15-2\sqrt{2}$	12.0049
14	0	0	0	0	0	1	$16-2\sqrt{2}$	12.8382
15	0	0	0	0	0	1	$17-2\sqrt{2}$	13.6716
16	$-\frac{1}{2}$	$\frac{8}{3}$	0	4	0	2	$19-2\sqrt{2}$	6.4044
17	0	0	0	0	0	1	$20-2\sqrt{2}$	6.98773
18	0	$-2\sqrt{2}$	0	0	0	$1-\sqrt{2}$	$21-3\sqrt{2}$	10.3995
19	0	0	0	0	0	1	$22-3\sqrt{2}$	10.9828
20	0	0	0	0	0	1	$23-3\sqrt{2}$	11.5662
21	0	0	0	0	0	1	$24-3\sqrt{2}$	12.1495
22	0	0	0	0	0	1	$25-3\sqrt{2}$	12.7328

23	0	0	0	0	0	1	$26-3\sqrt{2}$	13.3162
24	0	0	0	0	0	1	$27-3\sqrt{2}$	13.8995
25	1	0	0	0	0	2	$29-3\sqrt{2}$	14.4828
26	0	0	0	0	0	1	$30-3\sqrt{2}$	15.0662
27	0	0	0	0	0	1	$31-3\sqrt{2}$	15.6495
28	0	0	0	0	0	1	$32-3\sqrt{2}$	16.2328
29	0	0	0	0	0	1	$33-3\sqrt{2}$	16.8162
30	0	0	0	0	0	1	$34-3\sqrt{2}$	17.3995
31	0	0	0	0	0	1	$35-3\sqrt{2}$	17.9828
32	$-\frac{4\sqrt{2}}{5}$	$\sqrt{2}$	$-4\sqrt{2}$	0	$-4\sqrt{2}$	$1-\sqrt{2}$	$36-4\sqrt{2}$	5.22605
33	0	0	0	0	0	1	$37-4\sqrt{2}$	6.00938
34	0	0	0	0	0	1	$38-4\sqrt{2}$	6.79271
35	0	0	0	0	0	1	$39-4\sqrt{2}$	7.57605
36	0	0	6	0	0	2	$41-4\sqrt{2}$	23.3594
37	0	0	0	0	0	1	$42-4\sqrt{2}$	24.1427
38	0	0	0	0	0	1	$43-4\sqrt{2}$	24.926
39	0	0	0	0	0	1	$44-4\sqrt{2}$	25.7094
40	0	0	0	0	0	1	$45-4\sqrt{2}$	26.4927
41	0	0	0	0	0	1	$46-4\sqrt{2}$	27.276
42	0	0	0	0	0	1	$47-4\sqrt{2}$	28.0594
43	0	0	0	0	0	1	$48-4\sqrt{2}$	28.8427
44	0	0	0	0	0	1	$49-4\sqrt{2}$	29.626
45	0	0	0	0	0	1	$50-4\sqrt{2}$	30.4094
46	0	0	0	0	0	1	$51-4\sqrt{2}$	31.1927
47	0	0	0	0	0	1	$52-4\sqrt{2}$	31.976
48	0	0	0	0	0	1	$53-4\sqrt{2}$	32.7594
49	1	0	0	0	0	2	$55-4\sqrt{2}$	34.5427
50	0	$-2\sqrt{2}$	0	0	0	$1-\sqrt{2}$	$56-5\sqrt{2}$	31.0834
51	0	0	0	0	0	1	$57-5\sqrt{2}$	31.8667
52	0	0	0	0	0	1	$58-5\sqrt{2}$	32.6501
53	0	0	0	0	0	1	$59-5\sqrt{2}$	33.4334
54	0	0	0	0	0	1	$60-5\sqrt{2}$	34.2167
55	0	0	0	0	0	1	$61-5\sqrt{2}$	35.0001
56	0	0	0	0	0	1	$62-5\sqrt{2}$	35.7834
57	0	0	0	0	0	1	$63-5\sqrt{2}$	36.5667
58	0	0	0	0	0	1	$64-5\sqrt{2}$	37.3501
59	0	0	0	0	0	1	$65-5\sqrt{2}$	38.1334
60	0	0	0	0	0	1	$66-5\sqrt{2}$	38.9167
61	0	0	0	0	0	1	$67-5\sqrt{2}$	39.7001
62	0	0	0	0	0	1	$68-5\sqrt{2}$	40.4834
63	0	0	0	0	0	1	$69-5\sqrt{2}$	41.2667

64	-1	$\frac{184}{45}$	-3	$\frac{32}{3}$	0	2	$71-5\sqrt{2}$	-43.8946
65	0	0	0	0	0	1	$72-5\sqrt{2}$	-43.2779
66	0	0	0	0	0	1	$73-5\sqrt{2}$	-42.6612
67	0	0	0	0	0	1	$74-5\sqrt{2}$	-42.0446
68	0	0	0	0	0	1	$75-5\sqrt{2}$	-41.4279
69	0	0	0	0	0	1	$76-5\sqrt{2}$	-40.8112
70	0	0	0	0	0	1	$77-5\sqrt{2}$	-40.1946
71	0	0	0	0	0	1	$78-5\sqrt{2}$	-39.5779
72	0	$-\frac{4\sqrt{2}}{3}$	0	$-8\sqrt{2}$	0	$1-\sqrt{2}$	$79-6\sqrt{2}$	27.5068
73	0	0	0	0	0	1	$80-6\sqrt{2}$	28.1235
74	0	0	0	0	0	1	$81-6\sqrt{2}$	28.7401
75	0	0	0	0	0	1	$82-6\sqrt{2}$	29.3568
76	0	0	0	0	0	1	$83-6\sqrt{2}$	29.9735
77	0	0	0	0	0	1	$84-6\sqrt{2}$	30.5901
78	0	0	0	0	0	1	$85-6\sqrt{2}$	31.2068
79	0	0	0	0	0	1	$86-6\sqrt{2}$	31.8235
80	0	0	0	0	0	1	$87-6\sqrt{2}$	32.4401
81	$\frac{1}{2}$	1	0	0	0	2	$89-6\sqrt{2}$	31.5568
82	0	0	0	0	0	1	$90-6\sqrt{2}$	32.1735
83	0	0	0	0	0	1	$91-6\sqrt{2}$	32.7901
84	0	0	0	0	0	1	$92-6\sqrt{2}$	33.4068
85	0	0	0	0	0	1	$93-6\sqrt{2}$	34.0235
86	0	0	0	0	0	1	$94-6\sqrt{2}$	34.6401
87	0	0	0	0	0	1	$95-6\sqrt{2}$	35.2568
88	0	0	0	0	0	1	$96-6\sqrt{2}$	35.8735
89	0	0	0	0	0	1	$97-6\sqrt{2}$	36.4901
90	0	0	0	0	0	1	$98-6\sqrt{2}$	37.1068
91	0	0	0	0	0	1	$99-6\sqrt{2}$	37.7235
92	0	0	0	0	0	1	$100-6\sqrt{2}$	38.3401
93	0	0	0	0	0	1	$101-6\sqrt{2}$	38.9568
94	0	0	0	0	0	1	$102-6\sqrt{2}$	39.5735
95	0	0	0	0	0	1	$103-6\sqrt{2}$	40.1901
96	0	0	0	0	0	1	$104-6\sqrt{2}$	40.8068
97	0	0	0	0	0	1	$105-6\sqrt{2}$	41.4235
98	0	$-2\sqrt{2}$	0	0	0	$1-\sqrt{2}$	$106-7\sqrt{2}$	46.2828
99	0	0	0	0	0	1	$107-7\sqrt{2}$	46.8994
100	0	0	6	0	0	2	$109-7\sqrt{2}$	26.5161

```
Table[{n, d1[n, 1], D1[n, 1]}, {n, 1, 100}] // TableForm
```

1	1	1
2	$1-\sqrt{2}$	$2-\sqrt{2}$
3	1	$3-\sqrt{2}$

4	2	$5-\sqrt{2}$
5	1	$6-\sqrt{2}$
6	1	$7-\sqrt{2}$
7	1	$8-\sqrt{2}$
8	$1-\sqrt{2}$	$9-2\sqrt{2}$
9	2	$11-2\sqrt{2}$
10	1	$12-2\sqrt{2}$
11	1	$13-2\sqrt{2}$
12	1	$14-2\sqrt{2}$
13	1	$15-2\sqrt{2}$
14	1	$16-2\sqrt{2}$
15	1	$17-2\sqrt{2}$
16	2	$19-2\sqrt{2}$
17	1	$20-2\sqrt{2}$
18	$1-\sqrt{2}$	$21-3\sqrt{2}$
19	1	$22-3\sqrt{2}$
20	1	$23-3\sqrt{2}$
21	1	$24-3\sqrt{2}$
22	1	$25-3\sqrt{2}$
23	1	$26-3\sqrt{2}$
24	1	$27-3\sqrt{2}$
25	2	$29-3\sqrt{2}$
26	1	$30-3\sqrt{2}$
27	1	$31-3\sqrt{2}$
28	1	$32-3\sqrt{2}$
29	1	$33-3\sqrt{2}$
30	1	$34-3\sqrt{2}$
31	1	$35-3\sqrt{2}$
32	$1-\sqrt{2}$	$36-4\sqrt{2}$
33	1	$37-4\sqrt{2}$
34	1	$38-4\sqrt{2}$
35	1	$39-4\sqrt{2}$
36	2	$41-4\sqrt{2}$
37	1	$42-4\sqrt{2}$
38	1	$43-4\sqrt{2}$
39	1	$44-4\sqrt{2}$
40	1	$45-4\sqrt{2}$
41	1	$46-4\sqrt{2}$
42	1	$47-4\sqrt{2}$
43	1	$48-4\sqrt{2}$
44	1	$49-4\sqrt{2}$

45	1	$50 - 4\sqrt{2}$
46	1	$51 - 4\sqrt{2}$
47	1	$52 - 4\sqrt{2}$
48	1	$53 - 4\sqrt{2}$
49	2	$55 - 4\sqrt{2}$
50	$1 - \sqrt{2}$	$56 - 5\sqrt{2}$
51	1	$57 - 5\sqrt{2}$
52	1	$58 - 5\sqrt{2}$
53	1	$59 - 5\sqrt{2}$
54	1	$60 - 5\sqrt{2}$
55	1	$61 - 5\sqrt{2}$
56	1	$62 - 5\sqrt{2}$
57	1	$63 - 5\sqrt{2}$
58	1	$64 - 5\sqrt{2}$
59	1	$65 - 5\sqrt{2}$
60	1	$66 - 5\sqrt{2}$
61	1	$67 - 5\sqrt{2}$
62	1	$68 - 5\sqrt{2}$
63	1	$69 - 5\sqrt{2}$
64	2	$71 - 5\sqrt{2}$
65	1	$72 - 5\sqrt{2}$
66	1	$73 - 5\sqrt{2}$
67	1	$74 - 5\sqrt{2}$
68	1	$75 - 5\sqrt{2}$
69	1	$76 - 5\sqrt{2}$
70	1	$77 - 5\sqrt{2}$
71	1	$78 - 5\sqrt{2}$
72	$1 - \sqrt{2}$	$79 - 6\sqrt{2}$
73	1	$80 - 6\sqrt{2}$
74	1	$81 - 6\sqrt{2}$
75	1	$82 - 6\sqrt{2}$
76	1	$83 - 6\sqrt{2}$
77	1	$84 - 6\sqrt{2}$
78	1	$85 - 6\sqrt{2}$
79	1	$86 - 6\sqrt{2}$
80	1	$87 - 6\sqrt{2}$
81	2	$89 - 6\sqrt{2}$
82	1	$90 - 6\sqrt{2}$
83	1	$91 - 6\sqrt{2}$
84	1	$92 - 6\sqrt{2}$
85	1	$93 - 6\sqrt{2}$

86	1	$94 - 6\sqrt{2}$
87	1	$95 - 6\sqrt{2}$
88	1	$96 - 6\sqrt{2}$
89	1	$97 - 6\sqrt{2}$
90	1	$98 - 6\sqrt{2}$
91	1	$99 - 6\sqrt{2}$
92	1	$100 - 6\sqrt{2}$
93	1	$101 - 6\sqrt{2}$
94	1	$102 - 6\sqrt{2}$
95	1	$103 - 6\sqrt{2}$
96	1	$104 - 6\sqrt{2}$
97	1	$105 - 6\sqrt{2}$
98	$1 - \sqrt{2}$	$106 - 7\sqrt{2}$
99	1	$107 - 7\sqrt{2}$
100	2	$109 - 7\sqrt{2}$