```
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_] := K2[n] - If[ Floor[Log[2, n]] == Log[2, n], n^(1 / str) / Log[2, n], 0]
P[n_, 0] = 1;
P[n_, k_] := P[n, k] = Sum[ K7[j] P[Floor[n / j], k - 1], {j, 2, n}]
En[n_] := En[n] = Sum[ 1 / (k!) P[n, k], {k, 0, Log[2, n]}]
En[n_, z_] := En[n, z] = Sum[ (z^k) / (k!) P[n, k], {k, 0, Log[2, n]}]
en[n_] := Sum[ 1 / (k!) p[n, k], {k, 0, Log[2, n]}]
LAdd[n_] := Sum[ (2^(1 / str))^k / k, {k, 1, Log[2, n]}]
PP[n_, k_] := PP[n, k] = Sum[ 1 / k - PP[Floor[n / j], k + 1], {j, 2, n}]
PR[n_] := Sum[ FullSimplify[MangoldtLambda[j] / Log[j]], {j, 2, n}]
```

```
P[10^str, 1] + LAdd[10^str]
```

$\frac{16}{3}$

```
PR[10]
```

$\frac{16}{3}$

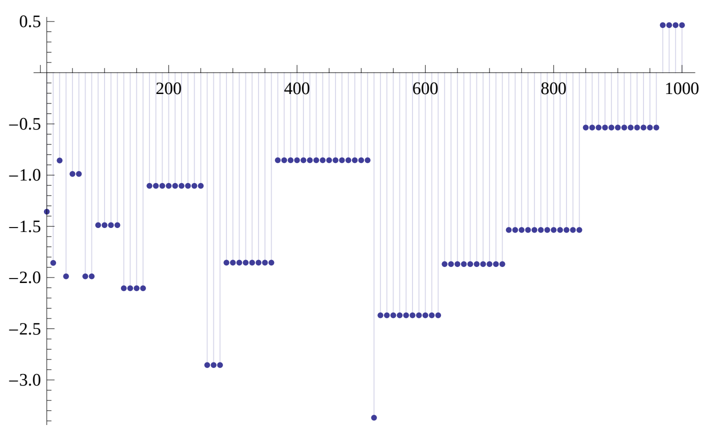
```
N[LAdd[10^str] - LAdd[2^str] + LogIntegral[2]]
```

5.45268

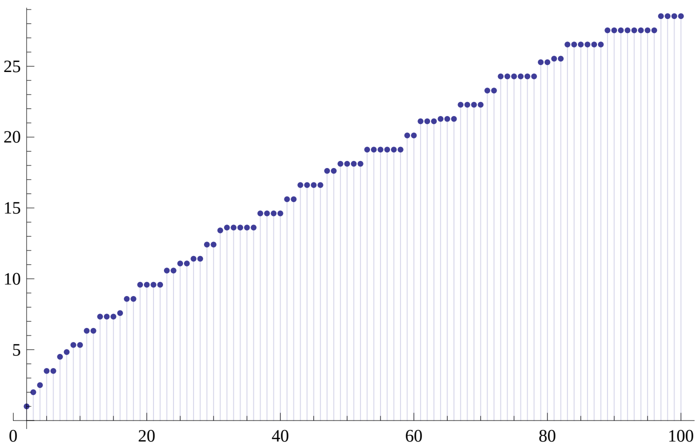
```
N[LogIntegral[10]]
```

6.1656

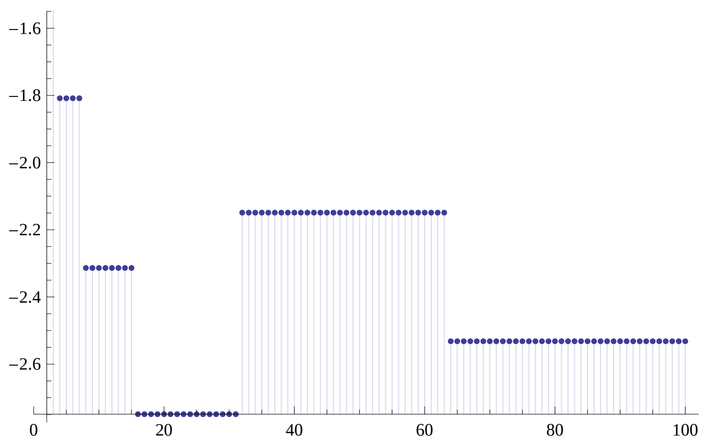
```
DiscretePlot[{P[n, 1]}, {n, 10, 1000, 10}]
```



```
DiscretePlot[{P[n^str, 1] + LAdd[n^str]}, {n, 2, 100}]
```



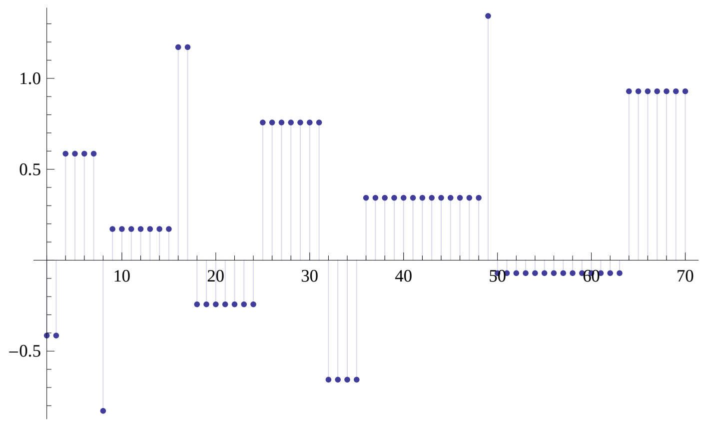
```
DiscretePlot[{P[n, 1]}, {n, 2, 100}]
```



```
Table[{n, FullSimplify[en[n]]}, {n, 2, 50}] // TableForm
```

2	$-\sqrt{2}$
3	0
4	1
5	0
6	0
7	0
8	$-\sqrt{2}$
9	1
10	0
11	0
12	0
13	0
14	0
15	0
16	1
17	0
18	$-\sqrt{2}$
19	0
20	0
21	0
22	0
23	0
24	0
25	1
26	0
27	0
28	0
29	0
30	0
31	0
32	$-\sqrt{2}$
33	0
34	0
35	0
36	1
37	0
38	0
39	0
40	0
41	0
42	0
43	0
44	0
45	0
46	0
47	0
48	0
49	1
50	$-\sqrt{2}$

```
DiscretePlot[En[n], {n, 2, 70}]
```




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

```
Table[{n, FullSimplify[P[n, 2] - P[n - 1, 2]]}, {n, 1, 100}] // TableForm
```

1	0
2	0
3	0
4	2
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	$\frac{8}{3}$
17	0
18	$-2\sqrt{2}$
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0
29	0

30	0
31	0
32	$\sqrt{2}$
33	0
34	0
35	0
36	0
37	0
38	0
39	0
40	0
41	0
42	0
43	0
44	0
45	0
46	0
47	0
48	0
49	0
50	$-2\sqrt{2}$
51	0
52	0
53	0
54	0
55	0
56	0
57	0
58	0
59	0
60	0
61	0
62	0
63	0
64	$\frac{184}{45}$
65	0
66	0
67	0
68	0
69	0
70	0
71	0
72	$-\frac{4\sqrt{2}}{3}$
73	0
74	0
75	0
76	0
77	0
78	0
79	0
80	0
81	1
82	0
83	0

84	0
85	0
86	0
87	0
88	0
89	0
90	0
91	0
92	0
93	0
94	0
95	0
96	0
97	0
98	$-2\sqrt{2}$
99	0
100	0

```
FullSimplify[Expand[en[256]]]
```

0

```
LAddx[n_, st_] := Sum[ st^k / k, {k, 1, Log[st, n]}]
```

```
Table[{N[2^(1 / n)], N[LAddx[100, 2^(1 / n)] - LAddx[2, 2^(1 / n)] + LogIntegral[2]]},
  {n, 1, 60}] // TableForm
```

2.	26.7785
1.41421	31.1928
1.25992	27.6806
1.18921	29.5759
1.1487	30.7722
1.12246	29.0556
1.10409	29.9624
1.09051	30.6612
1.08006	29.523
1.07177	30.1159
1.06504	30.6101
1.05946	29.7585
1.05477	30.1983
1.05076	30.5807
1.04729	29.9003
1.04427	30.2497
1.04162	29.6746
1.03926	29.995
1.03716	30.2848
1.03526	29.7931
1.03356	30.0628
1.03201	30.3103
1.0306	29.8808
1.0293	30.1137
1.02811	30.3297
1.02702	29.9485
1.026	30.1534
1.02506	30.345
1.02419	30.0023
1.02337	30.1851
1.02261	29.8714

1.0219	30.046
1.02123	30.2111
1.0206	29.9239
1.02	30.0823
1.01944	30.2327
1.01891	29.9679
1.01841	30.1129
1.01793	30.2511
1.01748	30.0055
1.01705	30.139
1.01664	30.2668
1.01625	30.0378
1.01588	30.1616
1.01552	29.9458
1.01518	30.0659
1.01486	30.1813
1.01455	29.9784
1.01425	30.0906
1.01396	30.1987
1.01368	30.0072
1.01342	30.1124
1.01316	30.214
1.01292	30.0329
1.01268	30.1319
1.01245	30.2278
1.01223	30.0558
1.01202	30.1494
1.01182	29.985
1.01162	30.0765

```
N[LogIntegral[100]]
```

30.1261

```
LAddx[n_, st_] := Sum[ st^k / k, {k, 1, Log[st, n]}]
```

```
LAddx[100, 1.000001] - LAddx[2, 1.000001] + LogIntegral[2]
```

$30.1262 - 2.46016 \times 10^{-10}\, i$

```
LAddx[100, 1.001] - LAddx[2, 1.001] + LogIntegral[2]
```

30.1267