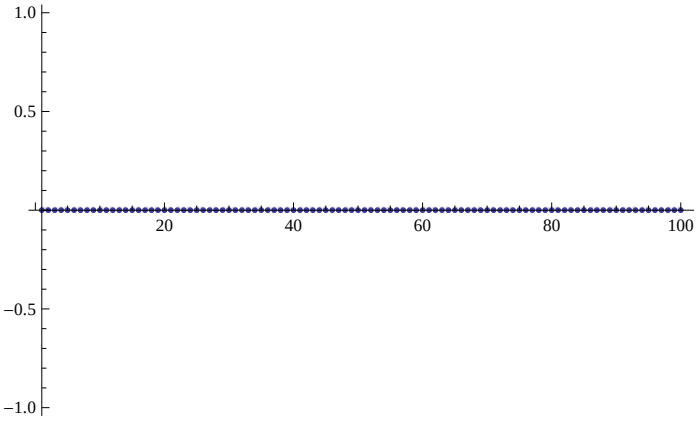
```
Table[ a[j], {j, 1, 30}]
```

```
{1, 1, 1, 2, 1, 1, 1, 3, 2, 1, 1, 2, 1, 1, 1, 5, 1, 2, 1, 2, 1, 1, 1, 3, 2, 1, 3, 2, 1, 1}
```

```
Clear[f]
bin[z_, k_] := Product[z - j, {j, 0, k - 1}] / k!
a[n_] := FiniteAbelianGroupCount[n]
f[n_, k_] := f[n, k] = Sum[ a[j] f[Floor[n / j], k - 1], {j, 2, n}]
f[n_, 0] := UnitStep[n - 1]
fz[n_, z_] := Sum[ bin[z, k] f[n, k], {k, 0, Log2@n}]
lf[n_] := Sum[ (-1)^(k + 1) / k f[n, k], {k, 1, Log2@n}]
pr[n_] := Sum[ PrimePi[n^(1 / k)] / k, {k, 1, Log2@n}]
pr2[n_] := Sum[ pr[n^(1 / k)], {k, 1, Log2@n}]
pr2d[n_] := pr2[n] - pr2[n - 1]
```

```
DiscretePlot[lf[n] - pr2[n], {n, 1, 100}]
```




```
Table[{n, pr2d[n]}, {n, 2, 100}] // TableForm
```

2	1
3	1
4	$\frac{3}{2}$
5	1
6	0
7	1
8	$\frac{4}{3}$
9	$\frac{3}{2}$
10	0
11	1
12	0
13	1
14	0
15	0
16	$\frac{7}{4}$
17	1
18	0
19	1

20	0
21	0
22	0
23	1
24	0
25	$\frac{3}{2}$
26	0
27	$\frac{4}{3}$
28	0
29	1
30	0
31	1
32	$\frac{6}{5}$
33	0
34	0
35	0
36	0
37	1
38	0
39	0
40	0
41	1
42	0
43	1
44	0
45	0
46	0
47	1
48	0
49	$\frac{3}{2}$
50	0
51	0
52	0
53	1
54	0
55	0
56	0
57	0
58	0
59	1
60	0
61	1
62	0
63	0
64	2
65	0
66	0
67	1
68	0
69	0
70	0
71	1
72	0
73	1

74	0
75	0
76	0
77	0
78	0
79	1
80	0
81	$\frac{7}{4}$
82	0
83	1
84	0
85	0
86	0
87	0
88	0
89	1
90	0
91	0
92	0
93	0
94	0
95	0
96	0
97	1
98	0
99	0
100	0

```
Table[DirichletCharacter[3, 1, n], {n, 0, 10}]
```

```
{0, 1, 1, 0, 1, 1, 0, 1, 1, 0, 1}
```

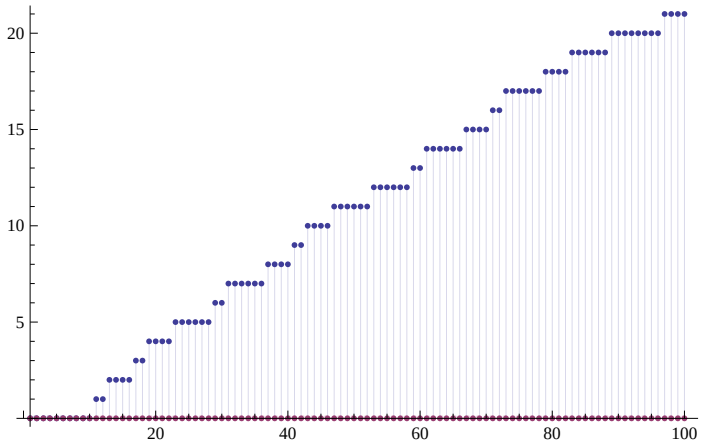
```
DirichletCharacter[3, 1, 16] DirichletCharacter[3, 1, 41]
```

```
1
```

```
DirichletCharacter[3, 1, 16 × 41]
```

```
1
```

```
Clear[f]
a[n_] := DirichletCharacter[210, 1, n]
f[n_, k_] := f[n, k] = Sum[a[j] f[Floor[n / j], k - 1], {j, 2, n}]
f[n_, 0] := UnitStep[n - 1]
lf[n_] := Sum[(-1)^(k + 1) / k f[n, k], {k, 1, Log2@n}]
DiscretePlot[{Re[lf[n]], Im[lf[n]]}, {n, 1, 100}]
Table[{n, Chop@N@Re[lf[n] - lf[n - 1]], Chop@N@Im[lf[n] - lf[n - 1]]}, {n, 1, 20}] //
 TableForm
```




```
1     0     0
2     0     0
3     0     0
4     0     0
5     0     0
6     0     0
7     0     0
8     0     0
9     0     0
10    0     0
11    1.    0
12    0     0
13    1.    0
14    0     0
15    0     0
16    0     0
17    1.    0
18    0     0
19    1.    0
20    0     0
```

```
Table[DirichletCharacter[210, 1, n], {n, 1, 100}]
```

```
{1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0,
 0, 0, 1, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 1,
 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0}
```

```
lf[100] + 1 + 1 / 2 + 1 / 3 + 1 / 4 + 1 / 5 + 1 / 6 + 1 + 1 / 2 + 1 / 3 + 1 / 4 + 1 + 1 / 2 + 1 + 1 / 2
```

$$\frac{428}{15}$$

```
Clear[aa]
ap[n_, p_] := Floor[n^(1 / p)] - Floor[(n - 1)^(1 / p)]
aa[n_] := aa[n] = Sum[ap[j, 1] ap[k, 2] ap[l, 3] ap[m, 4] ap[o, 5] ap[p, 6], {j, 1, n},
   {k, 1, n / j}, {l, 1, n / (j k)}, {m, 1, n / (j k l)}, {o, 1, n / (j k l m)}, {p, 1, n / (j k l m o)}]
```

```
Table[ aa[n] - aa[n - 1], {n, 1, 20}]
```

```
{1, 1, 1, 2, 1, 1, 1, 3, 2, 1, 1, 2, 1, 1, 1, 5, 1, 2, 1, 2}
```

```
Table[ a[n], {n, 1, 20}]
```

```
{1, 1, 1, 2, 1, 1, 1, 3, 2, 1, 1, 2, 1, 1, 1, 5, 1, 2, 1, 2}
```