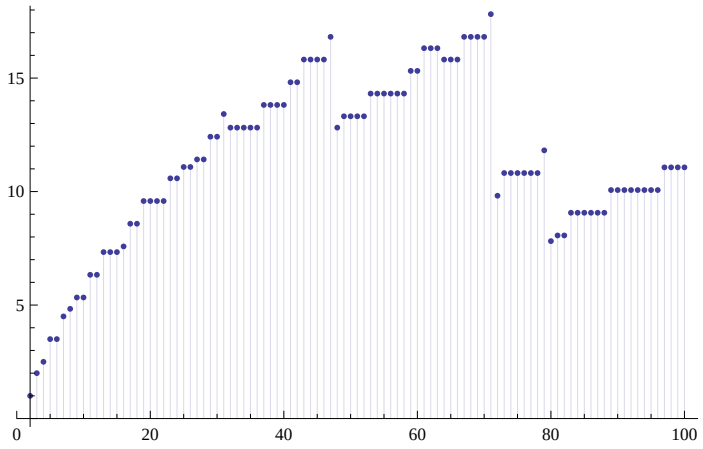
```
DD[n_, k_] := Sum[ DD[n / j, k - 1], {j, 1, n}]
DD[n_, 0] := 1
DD[100, 4]
3575
PP[n_, k_, a_ ] :=
 Sum[ a N[ MangoldtLambda[j] / Log[j]] ( 1 / (k !) + PP[n / j, k + 1, a]), {j, 2, n}]
PP[100, 1, 4]
P2[ n_, a_ ] := PP[n, 1, a]
P2[ 100, 3]
DD[100, 3]
P2[100, I]
P3[n_, k_ ] := P2[n, k] / k
DiscretePlot[Re[ P3[j, I] + P3[j, -I]], {j, 2, 100}]
```

```
QQ[n_, k_, a_ ] := Sum[ a ( 1 / k - QQ[n / j, k + 1, a]), {j, 2, n}]
Q2[ n_, a_ ] := QQ[n, 1, a]
Q3[n_, k_ ] := Q2[n, k] / k
Q4[n_, k_ ] := (Q3[n, 1 + k] + Q3[n, 1 - k]) / 2
DiscretePlot[ Re[Q4[j, 1 + I]], {j, 2, 100}]
```




```
Table[Q4[n, 1 + I] - Q4[n - 1, 1 + I], {n, 2, 100}]
```

$$\left\{1, 1, \frac{1}{2}, 1, 0, 1, \frac{1}{3}+\frac{2\,i}{3}, \frac{1}{2}, 0, 1, 2\,i, 1, 0, 0, \frac{1}{4}+\frac{i}{2}, 1, 2\,i, 1, 2\,i, 0, 0, 1, 0, \frac{1}{2}, 0, \frac{1}{3}+\frac{2\,i}{3},\right.$$
$$2\,i, 1, 4\,i, 1, -\frac{3}{5}+\frac{2\,i}{5}, 0, 0, 0, -i, 1, 0, 0, 0, 1, 4\,i, 1, 2\,i, 2\,i, 0, 1, -4, \frac{1}{2}, 2\,i, 0,$$
$$2\,i, 1, 0, 0, 0, 0, 0, 1, -4\,i, 1, 0, 2\,i, -\frac{1}{2}+\frac{i}{3}, 0, 4\,i, 1, 2\,i, 0, 4\,i, 1, -8, 1, 0, 2\,i,$$
$$\left.2\,i, 0, 4\,i, 1, -4, \frac{1}{4}+\frac{i}{2}, 0, 1, -4\,i, 0, 0, 0, 0, 1, -4\,i, 0, 2\,i, 0, 0, 0, 0, 1, 2\,i, 2\,i, -i\right\}$$