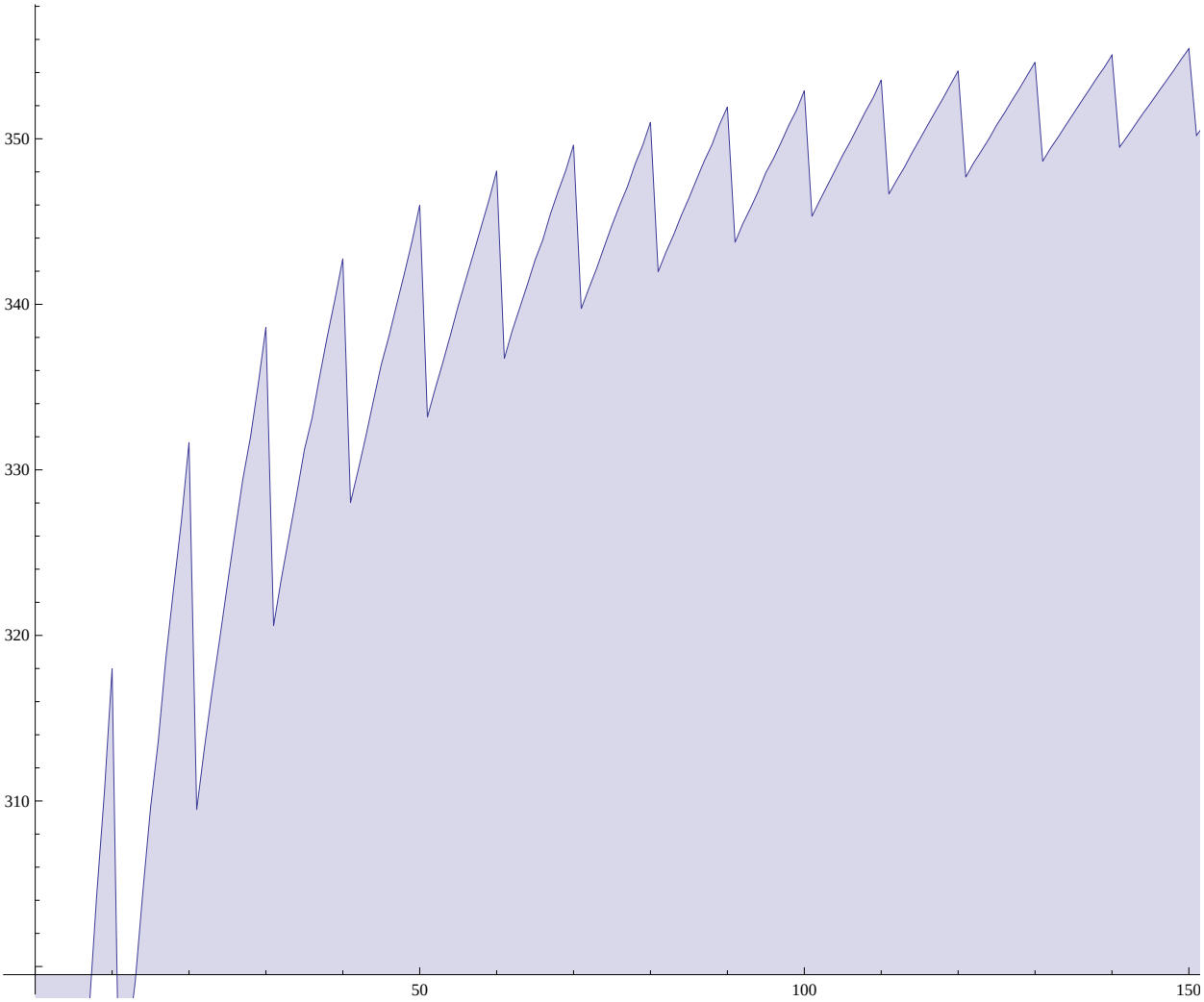
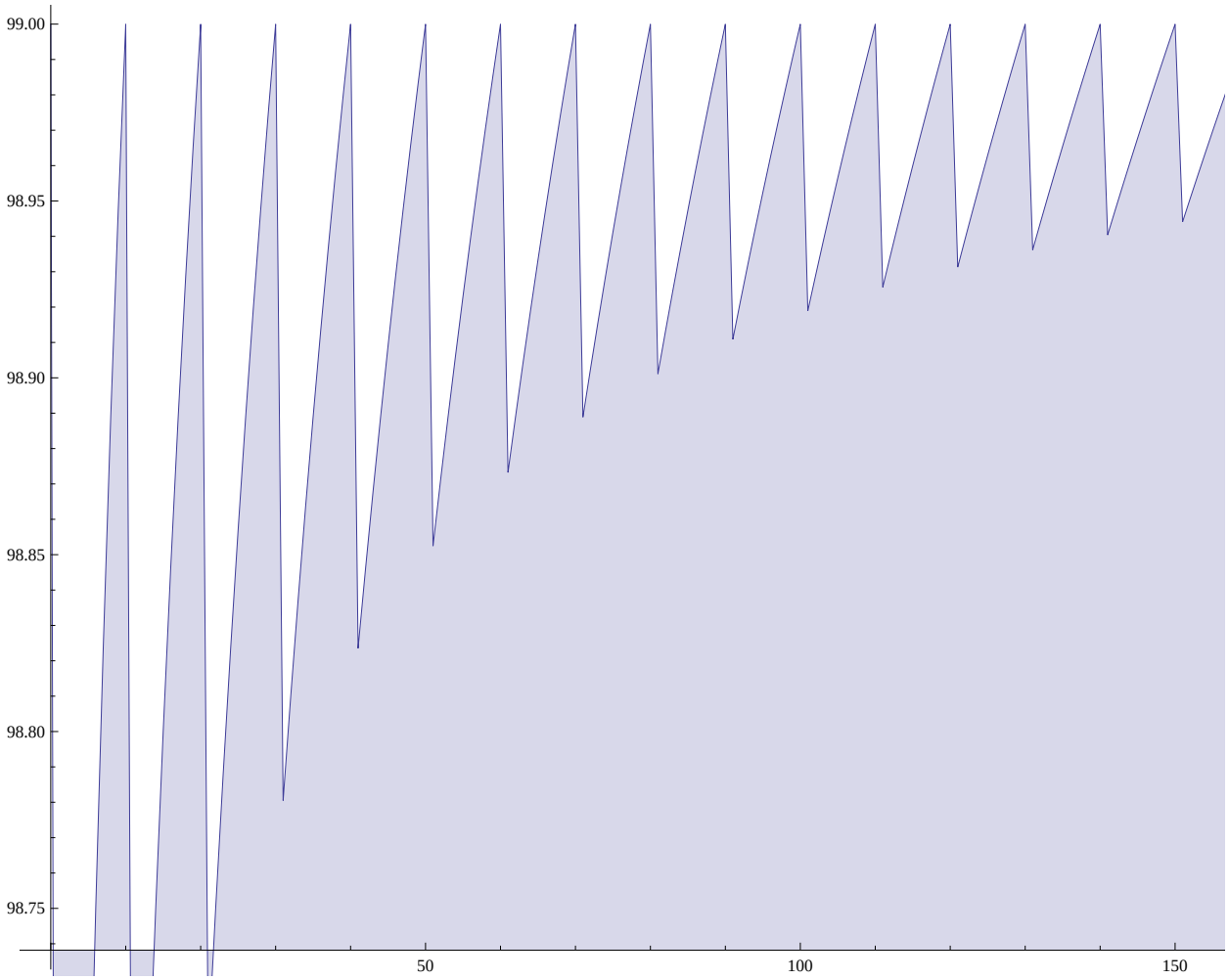
```
dp[ n_, k_, c_ ] := Sum[ c^-1 dp[ c n / j, k - 1, c], {j, 1 + c, Floor[n c^k]}];
dp[n_, 0, c_] := 1
dpa[ n_, k_, c_ ] := Sum[ c^-1 dp[ Floor[c n / j], k - 1, c], {j, 1 + c, Floor[n c^k]}];
dp[n_, 0, c_] := 1
dp2[ n_, k_, c_ ] := Sum[ dp2[ Floor[n / j], k - 1, c], {j, c, n}]; dp2[n_, 0, c_] := 1
dp2a[n_, k_, c_] := c^-k dp2[ n c^k, k, c + 1]

DiscretePlot[dp[100, 2, 1 + n / 10], {n, 0, 200}]
```



```
DiscretePlot[dpa[100, 1, 1 + n / 10], {n, 0, 200}]
```




```
DiscretePlot[dp[100, 3, 1 + n / 10], {n, 0, 200}]
```

```
$Aborted
```

```
3^2 dp[100 × 3^-2, 2, 3]
```

```
125
```

```
Dhyp[n_, k_, a_] :=
 Sum[Binomial[k, j] Dhyp[n / (m^(k - j)), j, m + 1], {m, a, n^(1 / k)}, {j, 0, k - 1}]
Dhyp[n_, 1, a_] := Floor[n] - a + 1; Dhyp[n_, 0, a_] := 1
```

```
Dhyp[100, 2, 4]
```

```
125
```

```
N[dp[100, 3, 1]]
```

```
324.
```

```
(-1)^(2 + 1) N[Gamma[2, -Log[100]] / Gamma[2]]
```

$$360.517 - 4.41506 \times 10^{-14}\, i$$

General::ivar : 3.5` is not a valid variable. ≫

```
{N[dp[100, 2, 2 + 1 / 10 000 000]], N[dp[100, 2, 3]]}
```

```
{285.25, 331.667}
```

```
{N[dp[100, 2, 3 + 1 / 10 000 000]], N[dp[100, 2, 4]]}
```

```
{307., 338.625}
```

```
{N[dp[100, 2, 4 + 1 / 10 000 000]], N[dp[100, 2, 5]]}
```

```
{318.875, 342.76}
```

```
{N[dp[100, 2, 5 + 1 / 10 000 000]], N[dp[100, 2, 6]]}
```

```
{326.32, 346.}
```

```
Table[{a, N[dp[100, 1, a + 1 / 10 000 000]], N[dp[100, 1, a]],
   N[dp[100, 1, a]] - N[dp[100, 1, a + 1 / 10 000 000]]}, {a, 1, 10}] // TableForm
```

1	98.	99.	1.00001
2	98.5	99.	0.500005
3	98.6667	99.	0.333337
4	98.75	99.	0.250002
5	98.8	99.	0.200002
6	98.8333	99.	0.166668
7	98.8571	99.	0.142859
8	98.875	99.	0.125001
9	98.8889	99.	0.111112
10	98.9	99.	0.100001

```
Table[{a, N[dp[100, 2, a + 1 / 10 000 000]], N[dp[100, 2, a]],
   N[dp[100, 2, a]] - N[dp[100, 2, a + 1 / 10 000 000]]}, {a, 1, 10}] // TableForm
```

1	234.	283.	49.
2	285.25	318.	32.75
3	307.	331.667	24.6667
4	318.875	338.625	19.75
5	326.32	342.76	16.44
6	331.889	346.	14.1111
7	335.714	348.061	12.3469
8	338.641	349.625	10.9844
9	341.111	351.	9.8889
10	342.93	351.92	8.99001

```
Table[{a, N[dp[100, 2, a + 1 / 10 000 000]], N[dp[100, 2, a + 1]],
   N[dp[100, 2, a + 1]] - N[dp[100, 2, a + 1 / 10 000 000]]}, {a, 1, 10}] // TableForm
```

1	234.	318.	84.
2	285.25	331.667	46.4167
3	307.	338.625	31.625
4	318.875	342.76	23.885
5	326.32	346.	19.68
6	331.889	348.061	16.1723
7	335.714	349.625	13.9107
8	338.641	351.	12.3594
9	341.111	351.92	10.8089
10	342.93	352.901	9.97083

```
N[dp2a[100, 2, 2 - 1 / 100 000 000]]
```

```
315.25
```

```
N[dp2a[100 - 1 / 1 000 000, 2, 2]]
```

```
315.25
```

```
dp[100, 3, 6.7]
```

```
608.303
```

```
ddp[n_, k_, b_] :=
 N[(dp[n, k, Floor[b] + 1 / 1 000 000] * (1 - (b - Floor[b])) + (b - Floor[b]) * dp[n, k, b + 1])]
```

```
6.5 - Floor[6.5]
```

```
0.5
```

```
ddp[100, 3, 6.7]
```

```
603.821
```