```
d[n_, k_] := Sum[d[j, k - 1] d[n / j, 1], {j, Divisors[n]}];
d[n_, 1] := 1; d[n_, 0] := 0; d[1, 0] := 1


tk1[n_, k_, a_] :=
 tk1[n, k, a] = Sum[ tk1[n / j, k - 1, a], {j, 1, n}] - a Sum[ tk1[n / (a j), k - 1, a], {j, 1, n / a}];
tk1[n_, 0, a_] := 1

EtoD[n_, k_, b_] := Sum[ Binomial[k + j - 1, k - 1] b^j tk1[n / (b^j), k, b], {j, 0, Log[b, n]}]
EtoDrng[n_, k_, b_, s1_, s2_] :=
 Sum[ Binomial[k + j - 1, k - 1] b^j tk1[n / (b^j), k, b], {j, s1, s2}]
EtoD[8, 1, 1.01]
```

8.

```
tk1[100, 3, .99]
```

35.5197

```
d[6, 4]
```

16

```
N[8 / 7]
```

1.14286

```
N[8 / 6]
```

1.33333

```
N[d[6, 2]]
```

4.

```
-1017.3949585738334 + 1019.3768024692354

-5116.0704331293155 + 5119.87203322637
```

1.98184

3.8016

```
Sum[ 8 / n, {n, 1, 8}]
N[761/35]
21.742857142857144 - 8
```

13.7429

```
Table[{j, b^j, Binomial[k + j - 1, k - 1] b^j tk1[n / (b^j), k, b]}, {j, 0, N[Log[b, n]]}] /.
  {b → 1.0003, n → 8, k → 1} // TableForm
```

Table::iterb : Iterator $\left\{j, 0, \frac{\text{Log[n]}}{\text{Log[b]}}\right\}$ does not have appropriate bounds. ≫

Table::iterb : Iterator $\left\{j, 0, \frac{\text{Log[n]}}{\text{Log[b]}}\right\}$ does not have appropriate bounds. ≫

```
Sum[Binomial[1 + j - 1, 1 - 1] b^j tk1[n / (b^j), k, b], {j, 1, 444}] /. {b → 1.0003, n → 8, k → 1}
```

$RecursionLimit::reclim : Recursion depth of 256 exceeded. ≫

$RecursionLimit::reclim : Recursion depth of 256 exceeded. ≫

$RecursionLimit::reclim : Recursion depth of 256 exceeded. ≫

General::stop : Further output of $RecursionLimit::reclim will be suppressed during this calculation. ≫

$IterationLimit::itlim : Iteration limit of 4096 exceeded. ≫

$IterationLimit::itlim : Iteration limit of 4096 exceeded. ≫

$IterationLimit::itlim : Iteration limit of 4096 exceeded. ≫

General::stop : Further output of $IterationLimit::itlim will be suppressed during this calculation. ≫

$Aborted

```
EtoDrng[8, 1, 1.0003, 1, 444]
```

-0.997489

```
EtoDrng[8, 1, 1.0003, 446, 958]
```

-1.14095

```
EtoDrng[8, 1, 1.0003, 960, 1565]
```

-1.32931

```
EtoDrng[8, 2, 1.0003, 1, 443]
EtoDrng[8, 2, 1.0003, 444, 445]
EtoDrng[8, 2, 1.0003, 446, 957]
EtoDrng[8, 2, 1.0003, 958, 959]
EtoDrng[8, 2, 1.0003, 960, 1564]
EtoDrng[8, 2, 1.0003, 1565, 1566]
```

0.15551

1.98184

0.565103

3.8016

1.01281

1.70023

```
Table[{j, b^j, Binomial[k + j - 1, k - 1] b^j tk1[n / (b^j), k, b]}, {j, 0, N[Log[b, n]]}] /.
  {b → 1.0003, n → 8, k → 2} // TableForm
```

Table::iterb : Iterator $\left\{j, 0, \frac{\text{Log[n]}}{\text{Log[b]}}\right\}$ does not have appropriate bounds. ≫

Table::iterb : Iterator $\left\{j, 0, \frac{\text{Log[n]}}{\text{Log[b]}}\right\}$ does not have appropriate bounds. ≫

```
eee := 1.00001
nnn := 7
kk := 2
EtoDrng[nnn, kk, eee, 0, 1]
EtoDrng[nnn, kk, eee, 1, Log[eee, nnn / (nnn - 1)] - 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 1)] - 4, Log[eee, nnn / (nnn - 1)] + 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 1)] + 4, Log[eee, nnn / (nnn - 2)] - 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 2)] - 4, Log[eee, nnn / (nnn - 2)] + 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 2)] + 4, Log[eee, nnn / (nnn - 3)] - 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 3)] - 4, Log[eee, nnn / (nnn - 3)] + 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 3)] + 4, Log[eee, nnn / (nnn - 4)] - 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 4)] - 4, Log[eee, nnn / (nnn - 4)] + 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 4)] + 4, Log[eee, nnn / (nnn - 5)] - 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 5)] - 4, Log[eee, nnn / (nnn - 5)] + 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 5)] + 4, Log[eee, nnn / (nnn - 6)] - 4]
EtoDrng[nnn, kk, eee, Log[eee, nnn / (nnn - 6)] - 4, Log[eee, nnn / (nnn - 6)] + 4]
```

```
2.

0.184395

3.94748

0.578643

1.85825

1.26573

2.31256

2.07133

0.713282

3.72224

-1.76864

5.73615

-6.62089
```

```
Table[ {j, b^j, Binomial[k + j - 1, k - 1] b^j tk1[n / (b^j), k, b]}, {j, 0, N[Log[b, n]]}] /.
  {b → 1.0003, n → 7, k → 5} // TableForm
```

Table::iterb : Iterator $\left\{j, 0, \frac{\text{Log[n]}}{\text{Log[b]}}\right\}$ does not have appropriate bounds. ≫

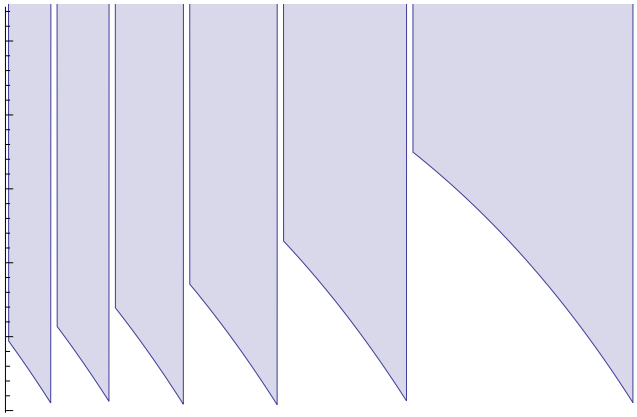
Table::iterb : Iterator $\left\{j, 0, \frac{\text{Log[n]}}{\text{Log[b]}}\right\}$ does not have appropriate bounds. ≫

```
-3.183930510163859`*^11 + 9.555254625672328`*^11 +
 -9.558718486195774`*^11 + 3.1873943706677026`*^11
```

```
-1.96021
```

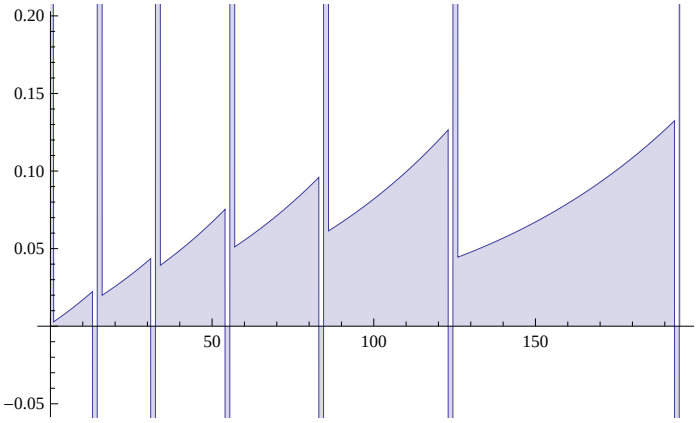
```
DiscretePlot[ Binomial[k + j - 1, k - 1] b^j tk1[n / (b^j), k, b], {j, 0, Log[b, n]}] /.
 {k → 1, n → 7, b → 1.01}
```

DiscretePlot::iterb : Iterator {j, 0, Log[b, n]} does not have appropriate bounds. ≫



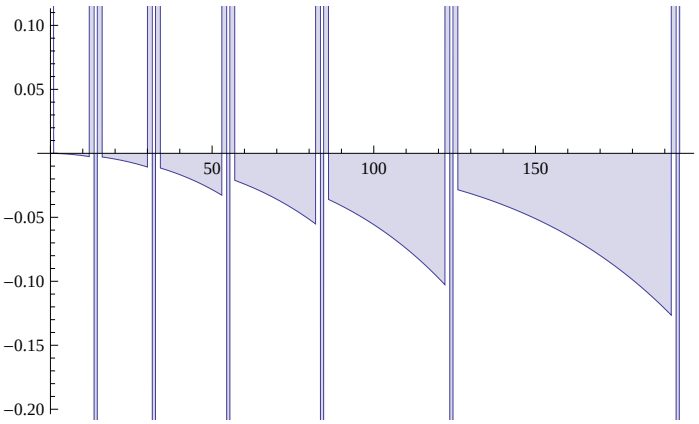
```
DiscretePlot[ Binomial[k + j - 1, k - 1] b^j tk1[n / (b^j), k, b], {j, 0, Log[b, n]}] /.
 {k → 2, n → 7, b → 1.01}
```

DiscretePlot::iterb : Iterator {j, 0, Log[b, n]} does not have appropriate bounds. ≫



```
DiscretePlot[ Binomial[k + j - 1, k - 1] b^j tk1[n / (b^j), k, b], {j, 0, Log[b, n]}] /.
 {k → 3, n → 7, b → 1.01}
```

DiscretePlot::iterb : Iterator {j, 0, Log[b, n]} does not have appropriate bounds. ≫




```
DiscretePlot[ Binomial[k + j - 1, k - 1] b^j tk1[n / (b^j), k, b], {j, 0, Log[b, n]}] /.
 {k → 4, n → 7, b → 1.02}
```

DiscretePlot::iterb : Iterator {j, 0, Log[b, n]} does not have appropriate bounds. ≫