

```

Clear[d2, aa, ab, da]
bin[z_, k_] := Product[z - j, {j, 0, k - 1}] / k!
sq[n_, m_] := Floor[n^m] - Floor[(n - 1)^m]
d2[n_, m_, k_] := d2[n, m, k] = Sum[sq[j, m] d2[Floor[n / j], m, k - 1], {j, 2, n}]
d2[n_, m_, 0] := UnitStep[n - 1]
dz[n_, m_, z_] := Sum[bin[z, k] d2[n, m, k], {k, 0, Log2@n}]
ddz[n_, m_, z_] := dz[n, m, z] - dz[n - 1, m, z]
aa[n_, m_] := aa[n, m] = ddz[n, 1 / m, MoebiusMu[m] / m]
ab[n_] := ab[n] = Sum[aa[a1, 1] aa[a2, 2] aa[a3, 3] aa[a5, 5] aa[a6, 6], {a1, 1, n},
    {a2, 1, n / a1}, {a3, 1, n / (a1 a2)}, {a5, 1, n / (a1 a2 a3)}, {a6, 1, n / (a1 a2 a3 a5)}]
ax[n_] := ab[n] - ab[n - 1]
da[n_, k_] := da[n, k] = Sum[ax[j] da[Floor[n / j], k - 1], {j, 2, n}]
da[n_, 0] := UnitStep[n - 1]
ld[n_] := Sum[(-1)^(k + 1) / k da[n, k], {k, 1, Log2@n}]

```

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Expand@ddz[8, 1 / 3, -1 / 3]
```

$$-\frac{1}{3}$$

```
Table[ax[n], {n, 1, 100}]
```

```

{1, 1, 1, 1/2, 1, 1, 1, 1/6, 1/2, 1, 1, 1/2, 1, 1, 1, 1/24, 1, 1/2, 1, 1/2, 1, 1, 1, 1/6, 1/2,
  1, 1/6, 1/2, 1, 1, 1, 1/120, 1, 1, 1, 1/4, 1, 1, 1, 1/6, 1, 1, 1, 1/2, 1/2, 1, 1, 1/24, 1/2, 1/2,
  1, 1/2, 1, 1/6, 1/6, 1, 1, 1, 1/2, 1, 1, 1/2, 1/720, 1, 1, 1, 1/2, 1, 1, 1, 1/12, 1, 1, 1/2,
  1/2, 1, 1, 1, 1/24, 1/24, 1, 1, 1/2, 1, 1, 1, 1/6, 1, 1/2, 1, 1/2, 1, 1, 1, 1/120, 1, 1/2, 1/2, 1/4}

```

```
DiscretePlot[ld[n], {n, 1, 100}]
```



