```mathematica
Clear[dda, a, f]
bin[z_, k_] := Product[z - j, {j, 0, k - 1}] / k!
FI[n_] := FactorInteger[n]; FI[1] := {}
dz[n_, z_] := dz[n, z] = Product[(-1)^p[[2]] Binomial[-z, p[[2]]], {p, FI[n]}]
Dz[n_, z_] := Sum[dz[j, z], {j, 1, n}]
dda[n_, s_, q_, z_] := dda[n, s, q, z] =
  Sum[a^-s b^-s dz[a, z] dz[b, -z], {a, 1, Floor[n]}, {b, 1, Floor[(n / a)^q]}]
dd[n_, s_, q_, k_] := dd[n, s, q, k] = Sum[j^-s j2^-s dd[n / (j j2^(1/q)), s, q, k - 1],
   {j, 1, Floor[n]}, {j2, 1, Floor[(n / j)^q]}]
dd[n_, s_, q_, 0] := UnitStep[n - 1]
d2[n_, s_, q_, k_] := Sum[(-1)^(k - j) Binomial[k, j] dda[n, s, q, j], {j, 0, k}]
ld[n_, s_, q_] := Sum[(-1)^(k + 1) / k d2[n, s, N@Log[q] / Log[n], k], {k, 1, Log2@n}]
fz[n_, s_, z_, q_] := Sum[bin[z, k] d2[n, s, N@Log[q] / Log[n], k], {k, 0, Log2@n}]
ffz[n_, s_, z_, q_] := fz[n, s, z, q] - fz[n - 1, s, z, q]
pr[n_, s_] := Sum[FullSimplify[MangoldtLambda[j] / Log[j]] j^-s, {j, 2, n}]
ch[n_] := -Sum[MangoldtLambda[j], {j, 2, n}]

ld[100, 0, 50]
```

$$\frac{125}{12}$$

```mathematica
pr[100] - pr[50]
```

$$\frac{125}{12}$$

```mathematica
Table[ffz[100, 0, z, k], {k, 1, 100}] // TableForm
```

$z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$2 z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$2 z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$z + 3 (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$2 z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$\frac{5}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$z + 3 (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$\frac{5}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$\frac{5}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$2 z + \frac{17}{2} (-1 + z) z + \frac{11}{2} (-2 + z) (-1 + z) z + \frac{3}{4} (-3 + z) (-2 + z) (-1 + z) z$

$z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$\frac{5}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{5}{24} (-3 + z) (-2 + z) (-1 + z) z$

$z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$\frac{1}{2} (-1 + z) z + (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$z + \frac{7}{2} (-1 + z) z + 2 (-2 + z) (-1 + z) z + \frac{1}{4} (-3 + z) (-2 + z) (-1 + z) z$

$z + \frac{7}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{1}{2} \, (-1 + z) \, z + (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{5}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$z - \frac{7}{2} \, (-1 + z) \, z - 7 \, (-2 + z) \, (-1 + z) \, z - \frac{11}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z - \frac{1}{4} \, (-4 + z) \, (-3 + z) \, (-2 + z) \, (-1 +$

$z + \frac{7}{2} \, (-1 + z) \, z + \frac{3}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{1}{12} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{5}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$z + \frac{7}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$2 \, z + \frac{17}{2} \, (-1 + z) \, z + \frac{11}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{3}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$z + \frac{9}{2} \, (-1 + z) \, z + \frac{5}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$2 \, z + \frac{11}{2} \, (-1 + z) \, z + \frac{9}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{3}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$z + \frac{7}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$2 \, z + \frac{7}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$z + \frac{7}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$- 2 \, z - \frac{19}{2} \, (-1 + z) \, z - 9 \, (-2 + z) \, (-1 + z) \, z - \frac{29}{12} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z - \frac{1}{6} \, (-4 + z) \, (-3 + z) \, (-2 + z) \, (-$

$\frac{5}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$- \frac{13}{2} \, (-1 + z) \, z - \frac{23}{2} \, (-2 + z) \, (-1 + z) \, z - \frac{53}{12} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z - \frac{5}{12} \, (-4 + z) \, (-3 + z) \, (-2 + z) \, (-1 +$

$2 \, (-1 + z) \, z + (-2 + z) \, (-1 + z) \, z$

$\frac{7}{2} \, (-1 + z) \, z + \frac{5}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{5}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{3}{2} \, (-1 + z) \, z + \frac{3}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$- z - \frac{9}{2} \, (-1 + z) \, z - 4 \, (-2 + z) \, (-1 + z) \, z - \frac{3}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$z - \frac{7}{2} \, (-1 + z) \, z - 4 \, (-2 + z) \, (-1 + z) \, z - \frac{3}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$2 \, z + \frac{13}{2} \, (-1 + z) \, z + 3 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{1}{2} \, (-1 + z) \, z + (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{5}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{7}{2} \, (-1 + z) \, z + \frac{5}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{5}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$z + \frac{9}{2} \, (-1 + z) \, z + \frac{5}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{1}{2} \, (-1 + z) \, z + \frac{1}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z + \frac{1}{24} \, (-4 + z) \, (-3 + z) \, (-2 + z) \, (-1 + z) \,$

$z + \frac{19}{2} \, (-1 + z) \, z + 14 \, (-2 + z) \, (-1 + z) \, z + \frac{21}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z + \frac{1}{2} \, (-4 + z) \, (-3 + z) \, (-2 + z) \, (-1$

$- z - \frac{7}{2} \, (-1 + z) \, z - 2 \, (-2 + z) \, (-1 + z) \, z - \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$z + \frac{7}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$z + \frac{9}{2} \, (-1 + z) \, z + \frac{5}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$2 \, z + \frac{13}{2} \, (-1 + z) \, z + 8 \, (-2 + z) \, (-1 + z) \, z + \frac{19}{6} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z + \frac{11}{24} \, (-4 + z) \, (-3 + z) \, (-2 + z) \, (-$

$z + \frac{3}{2} \, (-1 + z) \, z - \frac{1}{2} \, (-2 + z) \, (-1 + z) \, z - \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$- z - \frac{1}{2} \, (-1 + z) \, z + \frac{3}{2} \, (-2 + z) \, (-1 + z) \, z + \frac{3}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z + \frac{1}{12} \, (-4 + z) \, (-3 + z) \, (-2 + z) \, (-1$

$- \frac{3}{2} \, (-1 + z) \, z - 2 \, (-2 + z) \, (-1 + z) \, z - \frac{5}{12} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$\frac{5}{2} \, (-1 + z) \, z + 2 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$2 \, z + \frac{17}{2} \, (-1 + z) \, z + 4 \, (-2 + z) \, (-1 + z) \, z + \frac{1}{4} \, (-3 + z) \, (-2 + z) \, (-1 + z) \, z$

$$z + \frac{7}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$\frac{9}{2}\,(-1+z)\,z + \frac{9}{2}\,(-2+z)\,(-1+z)\,z + \frac{3}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$-z - \frac{1}{2}\,(-1+z)\,z + (-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$-z - \frac{1}{2}\,(-1+z)\,z + (-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$\frac{1}{2}\,(-1+z)\,z + (-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$\frac{5}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$z + \frac{7}{2}\,(-1+z)\,z + \frac{7}{2}\,(-2+z)\,(-1+z)\,z + \frac{17}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{1}{6}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+$$

$$\frac{5}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$2\,z + 12\,(-1+z)\,z + 11\,(-2+z)\,(-1+z)\,z + \frac{8}{3}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{1}{6}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1$$

$$\frac{1}{2}\,(-1+z)\,z + \frac{5}{2}\,(-2+z)\,(-1+z)\,z + \frac{7}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$-2\,z - \frac{3}{2}\,(-1+z)\,z + (-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$z + \frac{11}{2}\,(-1+z)\,z + 3\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$z + \frac{5}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{5}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{1}{24}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+$$

$$z + \frac{7}{2}\,(-1+z)\,z + \frac{5}{2}\,(-2+z)\,(-1+z)\,z + \frac{3}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{1}{12}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+$$

$$z + \frac{7}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$\frac{1}{2}\,(-1+z)\,z - \frac{1}{2}\,(-2+z)\,(-1+z)\,z - \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$z + \frac{7}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$-z - \frac{3}{2}\,(-1+z)\,z - \frac{3}{2}\,(-2+z)\,(-1+z)\,z - \frac{5}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$-z + \frac{3}{2}\,(-1+z)\,z + 3\,(-2+z)\,(-1+z)\,z + \frac{5}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{1}{6}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+$$

$$2\,z + \frac{19}{2}\,(-1+z)\,z - \frac{47}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{7}{8}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{1}{24}\,(-5+z)\,(-$$

$$z - \frac{11}{2}\,(-1+z)\,z - 11\,(-2+z)\,(-1+z)\,z - \frac{65}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{7}{8}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1$$

$$-\frac{11}{2}\,(-1+z)\,z - 11\,(-2+z)\,(-1+z)\,z - \frac{65}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{7}{8}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+$$

$$-z - \frac{13}{2}\,(-1+z)\,z - 11\,(-2+z)\,(-1+z)\,z - \frac{131}{24}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{7}{8}\,(-4+z)\,(-3+z)\,(-2+z)\,(-$$

$$z + \frac{15}{2}\,(-1+z)\,z + \frac{11}{2}\,(-2+z)\,(-1+z)\,z + \frac{3}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$2\,z + \frac{7}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$z + \frac{7}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$-2\,z - \frac{7}{2}\,(-1+z)\,z - 3\,(-2+z)\,(-1+z)\,z - \frac{17}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{5}{24}\,(-4+z)\,(-3+z)\,(-2+z)\,(-$$

$$-\frac{3}{2}\,(-1+z)\,z - 3\,(-2+z)\,(-1+z)\,z - \frac{17}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{5}{24}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+z$$

$$-2\,z - \frac{7}{2}\,(-1+z)\,z - 3\,(-2+z)\,(-1+z)\,z - \frac{17}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{5}{24}\,(-4+z)\,(-3+z)\,(-2+z)\,(-$$

$$-z + \frac{9}{2}\,(-1+z)\,z + 12\,(-2+z)\,(-1+z)\,z + \frac{85}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{17}{12}\,(-4+z)\,(-3+z)\,(-2+z)\,(-$$

$$-z + \frac{7}{2}\,(-1+z)\,z + 12\,(-2+z)\,(-1+z)\,z + \frac{29}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{17}{12}\,(-4+z)\,(-3+z)\,(-2+z)\,(-$$

$$\frac{3}{2}\,(-1+z)\,z + \frac{3}{2}\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$\frac{19}{2}\,(-1+z)\,z + \frac{29}{2}\,(-2+z)\,(-1+z)\,z + \frac{71}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{7}{8}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+z$$

$$\frac{5}{2}\,(-1+z)\,z - (-2+z)\,(-1+z)\,z - \frac{41}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{13}{12}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$-z - \frac{5}{2}\,(-1+z)\,z - 9\,(-2+z)\,(-1+z)\,z - \frac{27}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{17}{12}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1$$

$$z + \frac{7}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{11}{12}\,(-3+z)\,(-2+z)\,(-1+z)\,z + \frac{3}{8}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+$$

$$z + \frac{7}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z - \frac{1}{24}\,(-4+z)\,(-3+z)\,(-2+z)\,(-1+$$

$$-z - \frac{5}{2}\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$$2\,z + \frac{7}{2}\,(-1+z)\,z + 2\,(-2+z)\,(-1+z)\,z + \frac{1}{4}\,(-3+z)\,(-2+z)\,(-1+z)\,z$$

$\frac{5}{2}$ (-1 + z) z + 2 (-2 + z) (-1 + z) z + $\frac{1}{4}$ (-3 + z) (-2 + z) (-1 + z) z

$\frac{5}{2}$ (-1 + z) z + 2 (-2 + z) (-1 + z) z + $\frac{1}{4}$ (-3 + z) (-2 + z) (-1 + z) z

z + 3 (-1 + z) z + (-2 + z) (-1 + z) z

```
Clear[dz]
FI[n_] := FactorInteger[n]; FI[1] := {}
ss[n_, a_] := a (Floor[n / a] - Floor[(n - 1) / a])
bb[n_, a_, b_] := ss[n, b] - ss[n, a]
dz[n_, z_] := Product[(-1) ^ p[[2]] Binomial[-z, p[[2]]], {p, FI[n]}]
dza[n_, z_] := Product[ Binomial[z + p[[2]] - 1, p[[2]]], {p, FI[n]}]
ez[n_, z_, a_, b_] := Product[bb[p[[2]], a, b] Binomial[-z, p[[2]]], {p, FI[n]}]
eza[n_, z_, a_, b_] := Product[bb[p[[2]], a, b] Binomial[z + p[[2]] - 1, p[[2]]], {p, FI[n]}]
mz[n_, z_] := Product[ Binomial[-z, p[[2]]], {p, FI[n]}]
mza[n_, z_] := Product[(-1) ^ (p[[2]]) Binomial[z + p[[2]] - 1, p[[2]]], {p, FI[n]}]
```

Table[dza[n, -1], {n, 1, 10}]

{1, -1, -1, 0, -1, 1, -1, 0, 0, 1}

Table[mz[n, 1], {n, 1, 10}]

{1, -1, -1, 1, -1, 1, -1, -1, 1, 1}

Table[LiouvilleLambda[n], {n, 1, 10}]

{1, -1, -1, 1, -1, 1, -1, -1, 1, 1}

Table[mz[n, -1], {n, 1, 10}]

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

Table[mza[n, 1], {n, 1, 10}]

{1, 1, 1, -1, 1, 1, 1, 1, -1, 1}

Table[bb[n, 2, 1], {n, 1, 10}]

{1, -1, 1, -1, 1, -1, 1, -1, 1, -1}

Table[eza[n, -1, 2, 1], {n, 1, 10}]

{1, -1, -1, 0, -1, 1, -1, 0, 0, 1}