

```

F[n_, s_] := Sum[s^(j+k) / (j k), {j, 1, Log[s, n]}, {k, 1, Log[s, n / (s^j)]}]
N[F[100, 2^(1 / 128)]]
439.258
N[2^(1 / 128)]
1.00543
F2[n_] := Sum[2^(j) / (j), {j, 1, Log[2, n]}]
F2[100 000]
N[ $\frac{79\,691\,776}{9009}$ ]
8845.8
F3[n_] := Integrate[1 / Log[j k], {j, 1, n}, {k, 1, n / j}]
F3[n]
ConditionalExpression[-1 + n, n > 1]
F3[n_, a_] := Integrate[1 / Log[j k], {j, a, n}, {k, a, n / j}]
1.4513692348833810502839
N[F3[100, 1]]
99.
Integrate[1 / Log[j m k], {j, 1, n}, {k, 1, n / j}, {m, 1, n / (j k)}]
ConditionalExpression[ $\frac{1}{2} (1 - n + n \log[n])$ , n > 1]
Integrate[1 / Log[j], {j, 2, n}]
ConditionalExpression[-LogIntegral[2] + LogIntegral[n], Re[n] ≥ 1 || n ∉ Reals]
3.3^5.5
710.93
Log[3.3]
1.19392
E^(5.5 Log[3.3])
710.93
Fx[n_, s_] := Sum[s^(j+k) / (j k), {j, 1, Log[s, n]}, {k, 1, Log[s, n / (s^j)]}]
N[Fx[100, 2^(1 / 8)]]
255.924
a^x == E^(x Log[a])
Fy[n_, s_] :=
Sum[E^((j+k) Log[s]) / (j k), {j, 1, Log[n] / Log[s]}, {k, 1, Log[n / (s^j)] / Log[s]}]
N[Fy[100, 2^(1 / 8)]]
255.924

```

```

Fz[n_, s_] := Sum[E^((j+k) Log[s]) / (j k), {j, 1, Log[n] / Log[s]}, {k, 1, Log[n] / Log[s] - j}]
N[Fz[100, 2^(1/8)]]

255.924

pp[n_, s_, j_] := Log[n / (s^j)] / Log[s]
pp[100, .5, 3]

-9.64386

pp2[n_, s_, j_] := (Log[n] - j Log[s]) / Log[s]
pp2[100, .5, 3]

-9.64386

pp3[n_, s_, j_] := Log[n] / Log[s] - j
pp3[100, .5, 3]

-9.64386

Limit[Fz[n, s], {s -> 1}]
$Aborted

Fz2[n_, s_] := Sum[E^(j Log[s]) / j, {j, 1, Log[n] / Log[s]}]
Limit[Fz2[1000, s], {s -> Infinity}]

{Limit[-1000 s LerchPhi[s, 1, 1 + Log[1000] / Log[s]] - Log[1 - s], s -> infinity]}

Fz2[100, 1.1]

32.802

Fz2[100, 1.00001]

41.6391

E^(3 Log[4])

64

E^(Log[64])

64

E^(j Log[s])

s^j

Fz3[n_, s_] := Sum[E^(j Log[s]) / j, {j, Log[2] / Log[s], Log[n] / Log[s]}]
Fz3[100, 1.00001] + LogIntegral[2]

30.1262

N[LogIntegral[100]]

30.1261

soldner := 1.451369234883381050283968

Fz4[n_, s_] := Sum[E^(j Log[s]) / j, {j, Log[soldner] / Log[s], Log[n] / Log[s]}]

```

**Fz4[100, 1.00001]**

30.1262

**Fz5[n\_, s\_] := Sum[E^((j + (Log[soldner] / Log[s])) Log[s]) / (j + Log[soldner] / Log[s]),  
{j, 0, Log[n] / Log[s] - Log[soldner] / Log[s]}]**

**Fz5[100, 1.0001]**

30.1258

**Fz6[n\_, s\_] := Sum[E^(Log[soldner] + j Log[s]) / (j + Log[soldner] / Log[s]),  
{j, 0, (Log[n] - Log[soldner]) / Log[s]}]**

**Fz6[100, 1.0001]**

30.1258

**FullSimplify[Log[n] / Log[s] - Log[soldner] / Log[s]]**

$$\frac{-0.372507410781366634461992 + \text{Log}[n]}{\text{Log}[s]}$$

**E^(Log[soldner] + j Log[s]) / (j + Log[soldner] / Log[s])**

$$\frac{e^{\text{Log[soldner] + j Log[s]}}}{j + \frac{\text{Log[soldner]}}{\text{Log}[s]}}$$

**Fza[n\_, s\_] :=**

**Sum[E^((j + k) Log[s]) / (j k), {j, Log[2], Log[n] / Log[s]}, {k, Log[2], Log[n] / Log[s] - j}]**

**Fza[100, 1.001]**

\$Aborted

**Fz7[n\_, s\_] :=**

**Sum[E^(j Log[s]) / j, {j, 1, Log[n] / Log[s]}] - Sum[E^(j Log[s]) / j, {j, 1, Log[2] / Log[s]}]**

**Fz7[100, 1.00001] + LogIntegral[2]**

30.1262

**Integrate[LogIntegral[n / x], {x, 2, n}]**

$$\int_2^n \text{LogIntegral}\left[\frac{n}{x}\right] dx$$

**Integrate[1 / (Log[x] Log[y]), {x, 2, n}, {y, 2, n / x}]**

$$\int_2^n \frac{-\text{LogIntegral}[2] + \text{LogIntegral}\left[\frac{n}{x}\right]}{\text{Log}[x]} dx$$