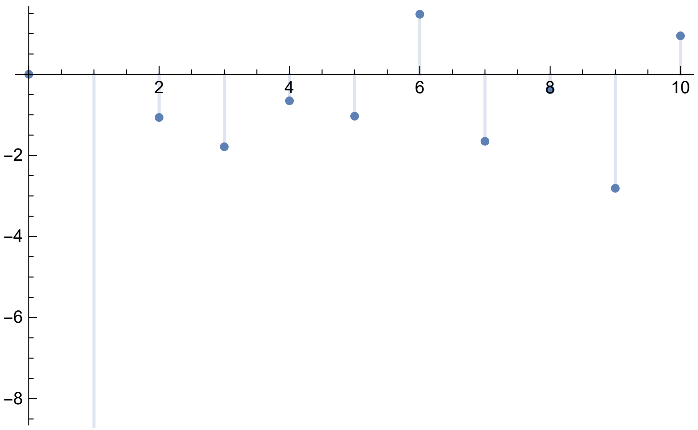
$$\texttt{DiscretePlot}\left[\texttt{Integrate}\left[\frac{\texttt{Zeta[t]}}{(\texttt{Exp[t]})}, \{\texttt{t}, 0, \texttt{y}\}\right], \{\texttt{y}, 0, 10\}\right]$$




$$\texttt{Integrate}\left[\frac{\texttt{Zeta[t]}}{(\texttt{t})}, \{\texttt{t}, 0, 80\}\right] \texttt{ // N}$$

-95 803.7

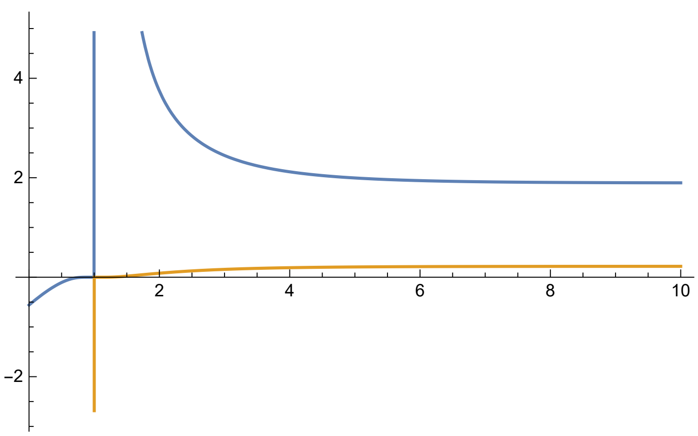
$$\texttt{Integrate}\left[\frac{\texttt{Zeta[t]}}{(\texttt{t})}, \{\texttt{t}, 0, 20\}\right] \texttt{ // N}$$

-95 773.3

$$\texttt{Table}\left[\texttt{Integrate}\left[\frac{\texttt{Zeta[t]}}{(\texttt{t})}, \{\texttt{t}, 0, \texttt{y}\}\right], \{\texttt{y}, 0, 10\}\right] \texttt{ // N}$$

```
{0., -153.044, -9.28723, -7.3487, -7.70733,
 -4.96034, 2.14013, -6.14528, -6.30081, -9.2677, 1.11205}
```

```
Plot[{ExpIntegralEi[Zeta[t]], ExpIntegralE[1, Zeta[t]]}, {t, 0, 10}]
```




*Note that neither is the more general of the other

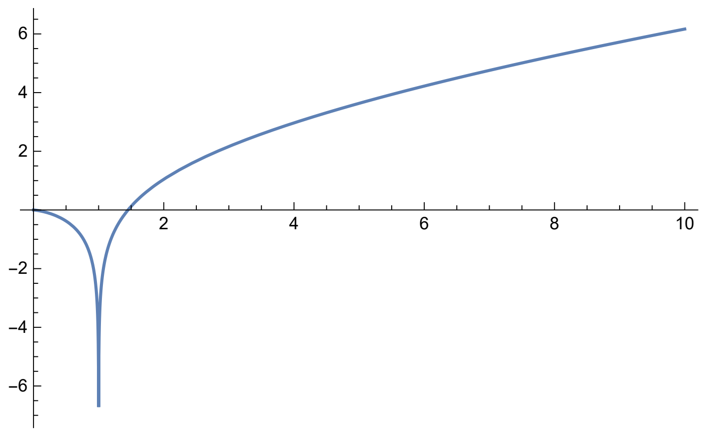
ExpIntegral fns can be applied to power series:

```
ExpIntegralE[2, 1 + x + x^2/2 + O[x]^4]
ExpIntegralEi[1 + x + x^2/2 + x^3/9 + O[x]^4]
```

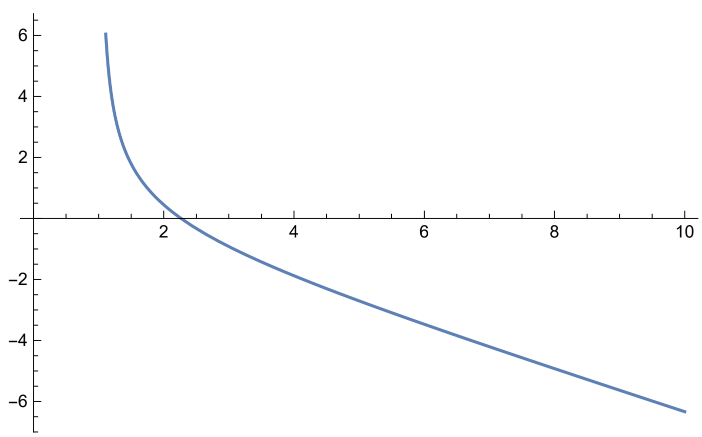
$$\text{ExpIntegralE}[2,1]-\text{ExpIntegralE}[1,1]\,x+\left(\frac{1}{2\,e}-\frac{1}{2}\,\text{ExpIntegralE}[1,1]\right)x^2+\left(\frac{1}{2\,e}-\frac{1}{6}\,\text{ExpIntegralE}[-1,1]\right)x^3+O[x]^4$$

$$\text{ExpIntegralEi}[1]+e\,x+\frac{e\,x^2}{2}+\frac{5\,e\,x^3}{18}+O[x]^4$$

```
Plot[LogIntegral[t], {t, 0, 10}]
```




```
Plot[LogIntegral[Zeta[t]], {t, 0, 10}]
```




LogIntegral can also be used to examine power series:

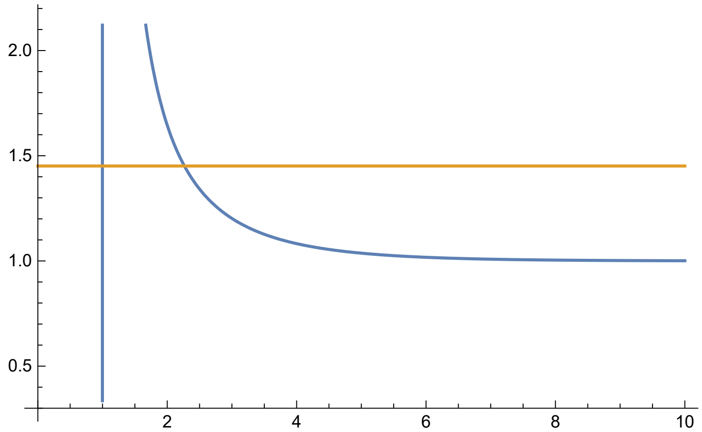
```
LogIntegral[2 + x + x^2/2 + O[x]^3]
```

$$\text{LogIntegral}[2]+\frac{x}{\text{Log}[2]}+\left(\frac{1}{4\,\text{Log}[2]}+\frac{-2+\text{Log}[4]}{8\,\text{Log}[2]^2}\right)x^2+O[x]^3$$

```
FindRoot[LogIntegral[t], {t, 2}]
```

$\{t\to 1.45137\}$

```
Plot[{Zeta[t], 1.451369234883381`}, {t, 0, 10}]
```




```
FindRoot[(Zeta[t] - 1.451369234883381`), {t, 2}]
```

{t → 2.26545}

So Zeta[2.26545] ≈ 1.451369234883381

```
Zeta[2.265445641766732`]
```

1.45137