```
Sum[((-1)^(k-1) (z-1)^k) / k, {k, 1, Infinity}]
```

```
Log[z]
```

```
Limit[ (z^e-1) / e, e → 0]
```

```
Log[z]
```

```
Limit[ e (z^(1 / e) - 1), e → Infinity]
```

```
Log[z]
```

```
((z-1) / (E-1)) Product[(E^2^(-k) + 1) / (z^2^(-k) + 1), {k, 1, Infinity}]
```

$$\frac{(-1+z)\prod_{k=1}^{\infty}\frac{1+e^{2^{-k}}}{1+z^{2^{-k}}}}{-1+e}$$

```
Integrate[1 / t, {t, 1, z}]
```

```
ConditionalExpression[Log[z], Re[z] ≥ 0 || z ∉ Reals]
```

```
Sum[((-1)^(k-1) / (Subscript[z, 0]^k k)) (z - Subscript[z, 0])^k, {k, 1, Infinity}]
```

$$\text{Log}\left[\frac{z}{z_0}\right]$$

```
-Sum[((1-z)^k) / k, {k, 1, Infinity}]
```

```
Log[z]
```

```
2 Sum[((x-1) / (x+1))^(2 k-1) / (2 k-1), {k, 1, Infinity}]
```

```
Sum[((x-1) / x)^k / k, {k, 1, Infinity}]
```