

### [11.3] Try `cZeros()` and `cSolve()` to find real solutions

`zeros()` and `solve()` may return no solutions even when real solutions exist, for example:

```
solve((-1)^n=1, n)
```

returns *false*, and

```
zeros((-1)^n-1, n)
```

returns {}, indicating that no solution was found. However,

```
cSolve((-1)^n=1, n)
```

returns  $n = 2^*@n1$ , and

```
cZeros((-1)^n-1, n)
```

returns  $\{2^*@n1\}$ ; both of these results are correct.

As another example, consider

```
cSolve(ln(e^z_)=ln(z_^2))
```

As shown, with no guess, the returned result is

```
e^z_-z_^2=0
```

which doesn't help much. However, with an initial complex solution guess:

```
cSolve(ln(e^z_)=ln(z_^2), {z_=i})
```

`cSolve()` returns one complex result of  $1.588... + 1.540...i$ . With a real guess:

```
cSolve(ln(e^z_)=ln(z_^2), {z_=0})
```

`cSolve()` returns one real result of  $-0.7034...$ . Note that `cSolve()` returns these approximate floating-point results even in Exact mode.

*(Credit to Bhuvanesh Bhatt)*