Most arithmetic expressions can be evaluated. For example, \(2+3\) evaluates to 5. Our evaluation rules do not give us any answer for \(1/0\). That's because there is no single answer that makes sense. We might look at \(\frac{n}{1/(1/n)}\), which is \(\infty\). But we might equally well look at \(\frac{n}{1/(-1/n)}\), which is \(-\infty\). We already have some arithmetic expressions that evaluate to a bunch of answers. For example, \(4^{1/2}\) evaluates to 2, -2. So perhaps it makes sense to say \(1/0 = \infty, -\infty\). What sense can we make of \(0/0\)?

As we saw in Exercise 39, we can consistently say \(0/0 = 5\), and might try to justify it by noticing that \(\frac{n}{(5/n)/(1/n)} = 5\). But by the same reasoning we can say \(0/0 = x\) for any \(x\). So we could say \(0/0 = x_{real}\). Or even \(0/0 = x_{com}\) if we define \(x_{com}\) to be the extended complex numbers.