Patrik Jausson $DSL
ightarrow \delta \sigma \lambda$

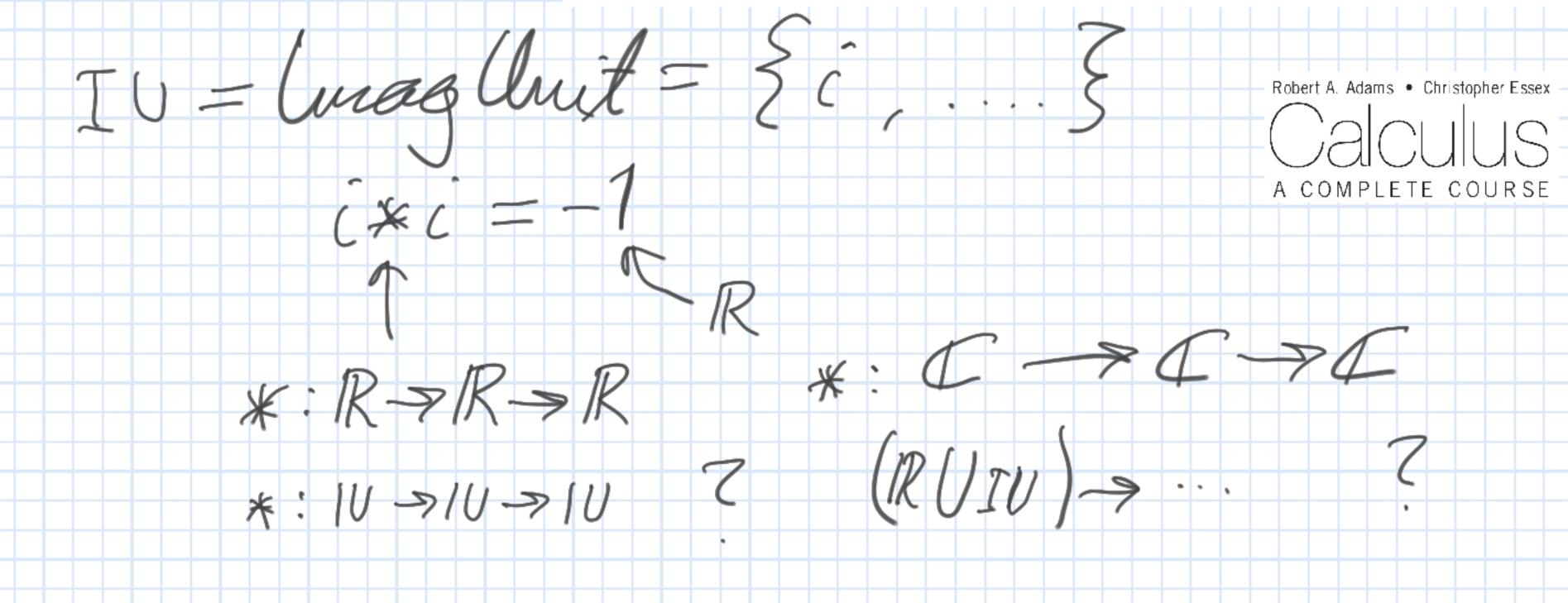
 $DSL_{20}/Mstp$

Definition of Complex Numbers

We begin by defining the symbol i, called **the imaginary unit,** to have the property

$$i^2 = -1$$
.

Thus, we could also call i the **square root of** -1 and denote it $\sqrt{-1}$. Of course, i is not a real number; no real number has a negative square.



DEFINITION

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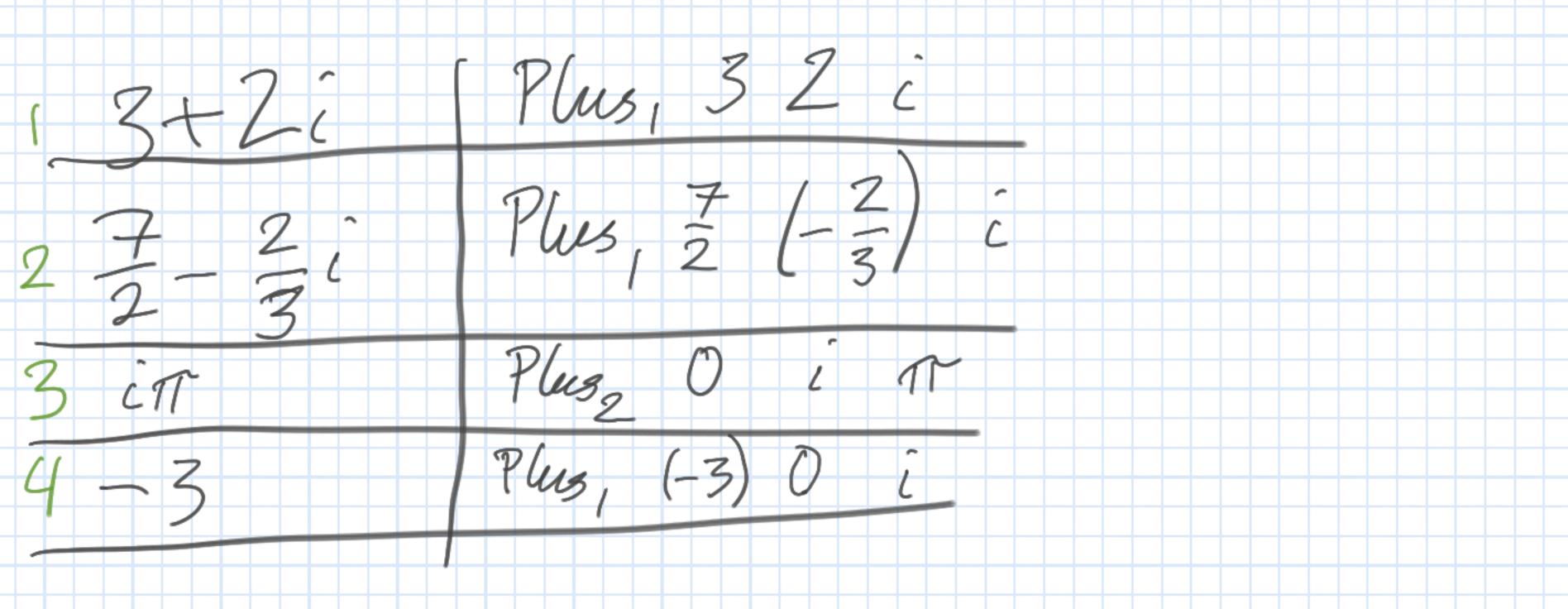
A complex number is an expression of the form

$$a + bi$$
 or $a + ib$

where a and b are real numbers, and i is the imaginary unit.

Adams and Essex continue with examples:

For example, 3 + 2i, $\frac{7}{2} - \frac{2}{3}i$, $i\pi = 0 + i\pi$ and -3 = -3 + 0i are all complex numbers. The last of these examples shows that every real number can be regarded as a complex number.



(We will normally use a + bi unless b is a complicated expression, in which case we will write a + ib instead. Either form is acceptable.)

It is often convenient to represent a complex number by a single letter; w and z are frequently used for this purpose. If a, b, x, and y are real numbers, and w = a + bi and z = x + yi, then we can refer to the complex numbers w and z. Note that w = z if and only if a = x and b = y.

Plus = Plus

bita=atib

= ib+a=a+bc