Adobe Illustrator – Expand and Expand Appearance

Since Illustrator was primarily designed to create illustrations, it's important to realize that what you see on the screen might **not** be representative of how the image was constructed.
*(This is true of most of the 2D drawing software.)*

It matters when you use this software to create a design for a laser or cutter though, because those types of machines typically see the **vector paths** underlying what shows on the screen, and not necessarily what we see. So we have to "Expand" the appearance of the object so that the vector paths match the visual image.

When AI exports to the SVG format, certain items such as rounding and variable line width designing are automatically expanded, but for single width strokes and overlays of shapes, they are not. It's a good idea to get into the habit of expanding your work so that what you see is what is actually going to cut.

I'm going to walk through a simple example of creating a clover with Illustrator to demonstrate how to make what you see match what the laser will see.

Without selecting these objects - this looks like three rounded heart shaped objects and a stem.
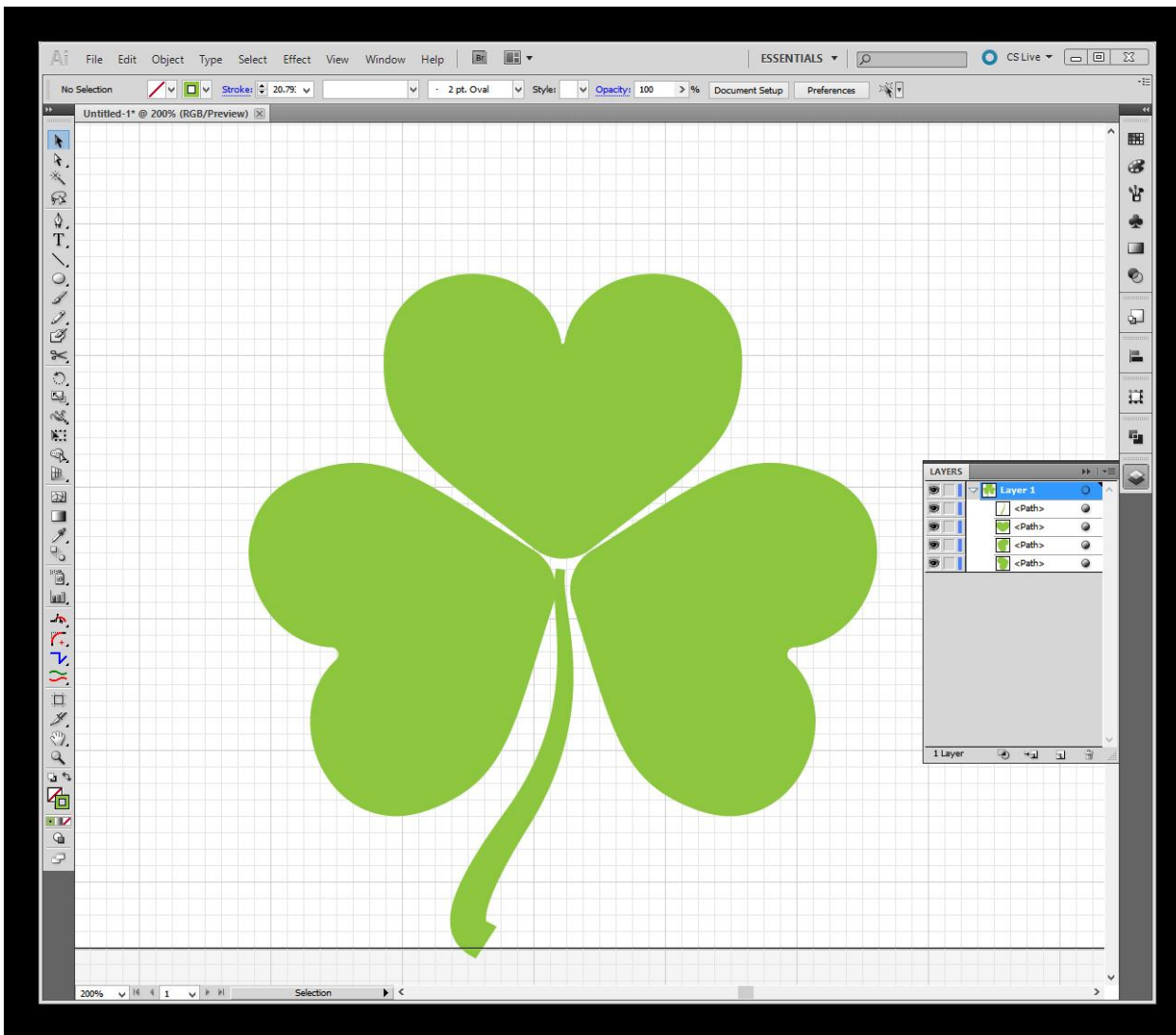
But when you select everything, you will see that the actual shapes of the vector paths for it are extremely different. The hearts have points that overlap, and the stem is a single line of variable width. We would have to **Expand** those shapes to make the paths match the appearance.
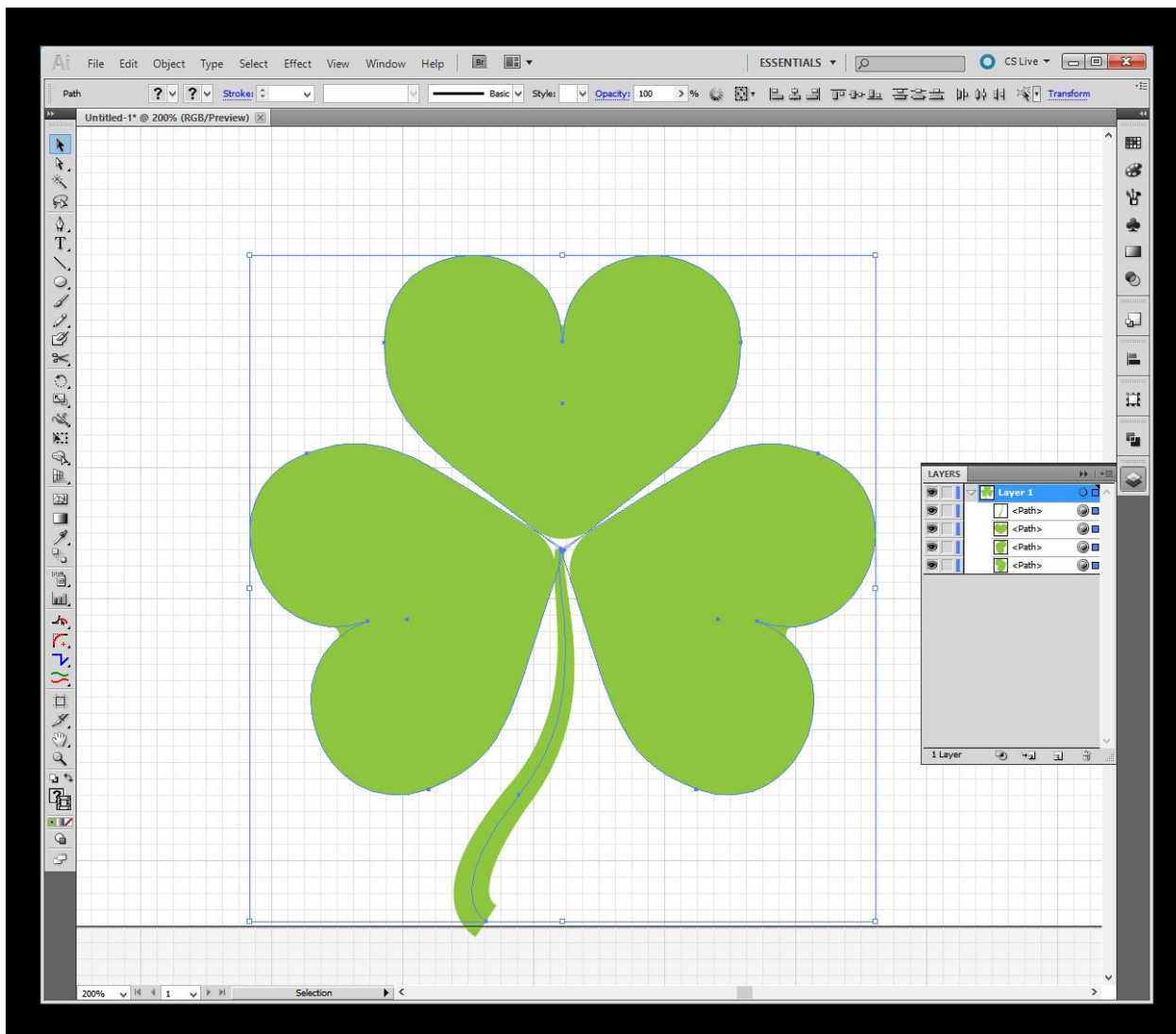

Expert Tip: One way to quickly see what the laser will see is to click on **View** at the top and switch to **Outline Mode**. It's a good habit to get into. When you're done, you can switch back to **Preview mode**.

Before I expand the appearance though, I want to combine those three heart shapes into one unit. Since they actually do overlap, *(even though they don't look like they do)*, I'm going to use the **Unite** tool in the **Pathfinder Palette** to combine all 3 hearts into one shape.
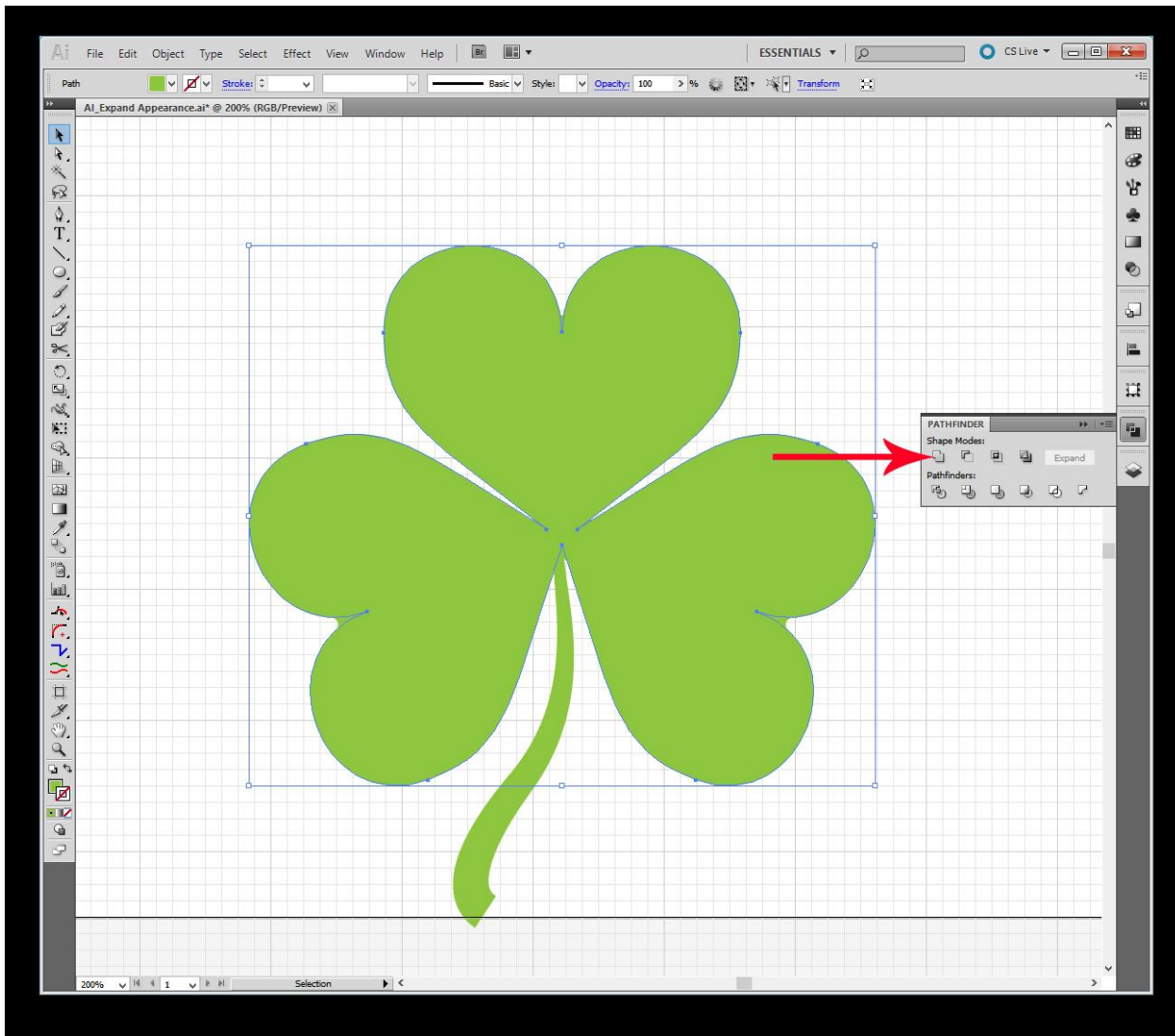
You can see that the three hearts are now joined into one unit at the tips. Also note that the more pointed strokes at the tops of the hearts show that the shape has not been expanded yet.

Next step is to join the stem to the clover top. If you forget that your shapes haven't been expanded yet, you'll get something like this, because of that single line stem:
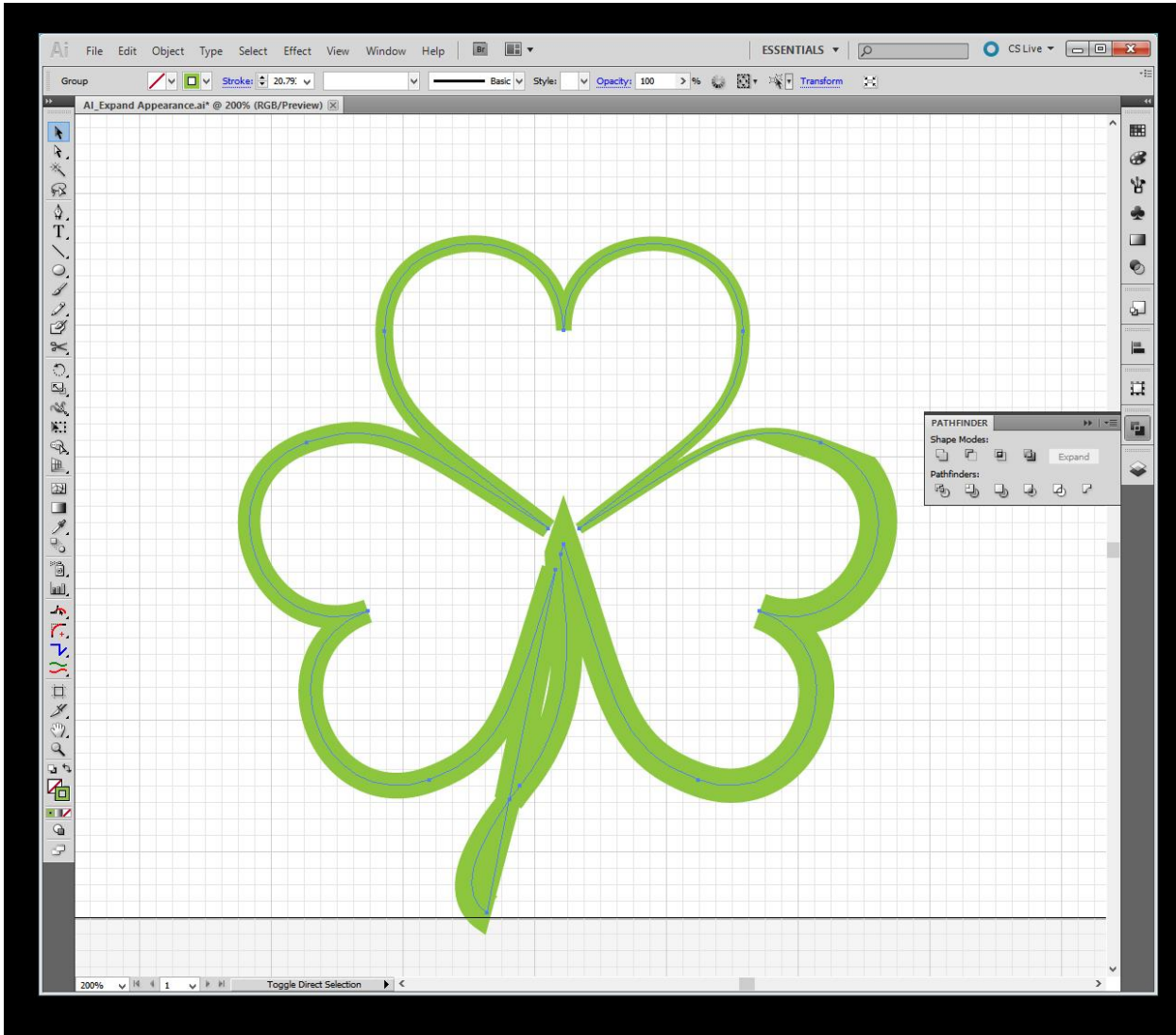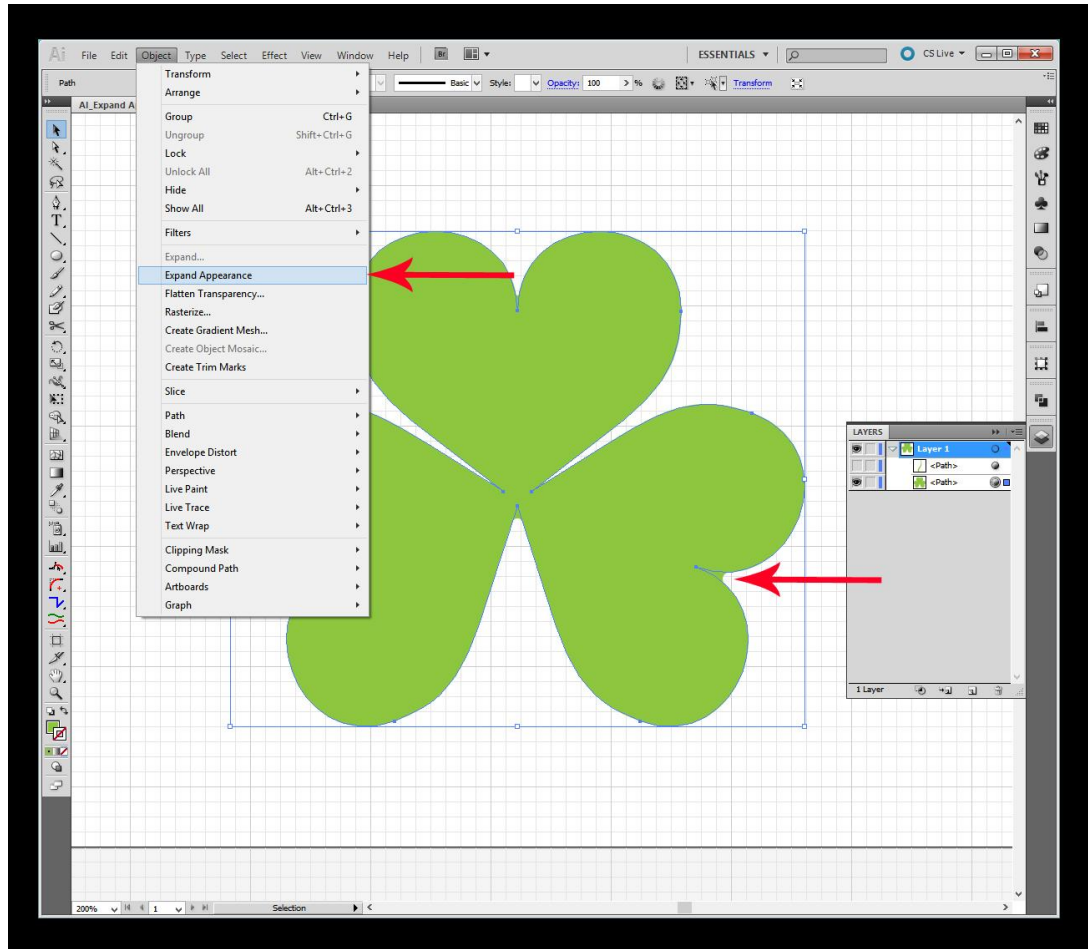

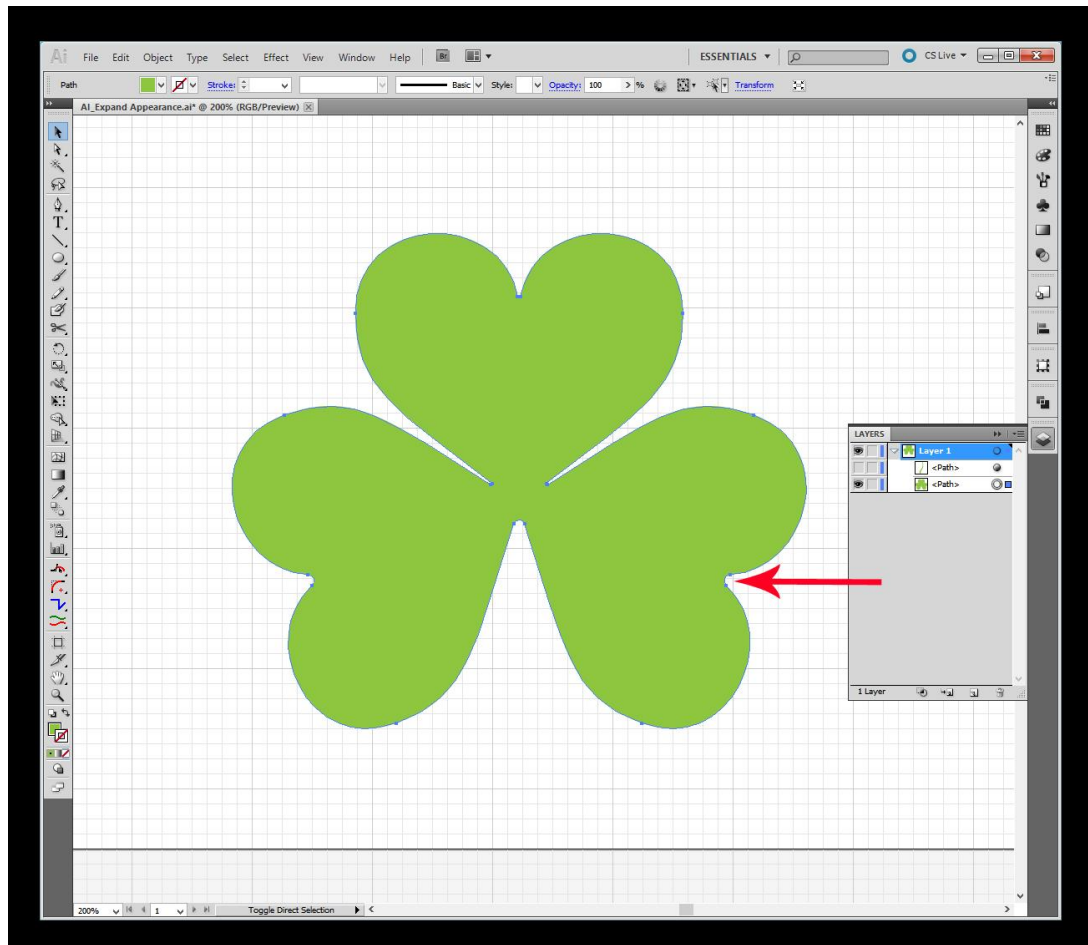Not exactly what we had in mind, so we'll expand the parts first and then combine them.

Click the Clover to select it, then click **Object > Expand Appearance**. *(next page)*

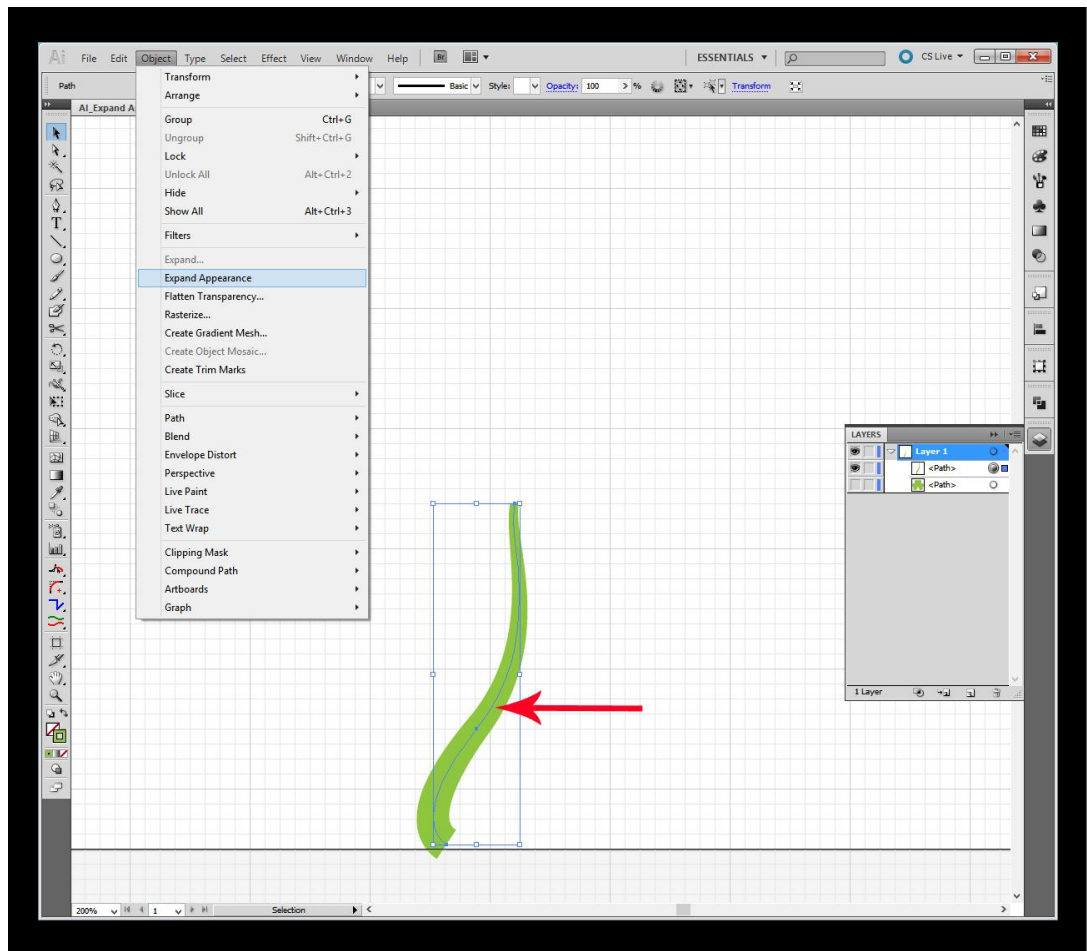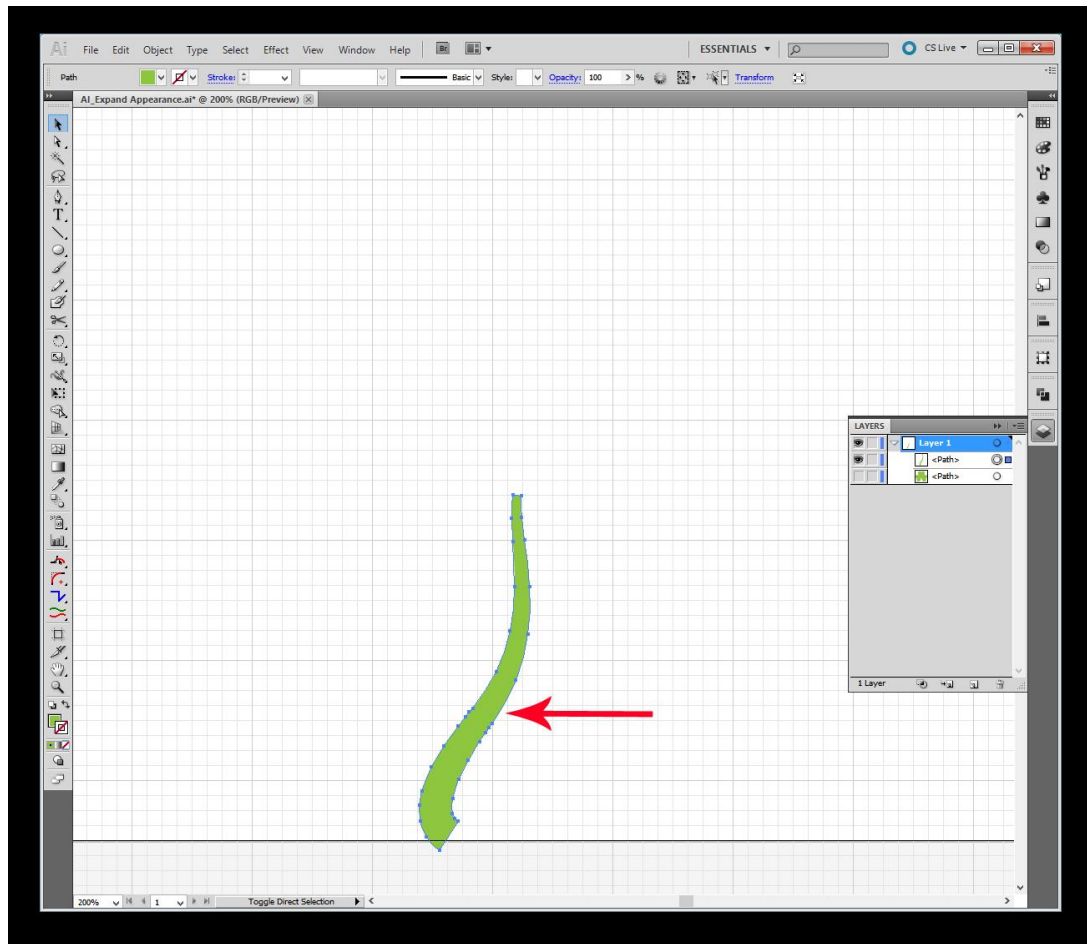Note the differences in the path as shown before and after.

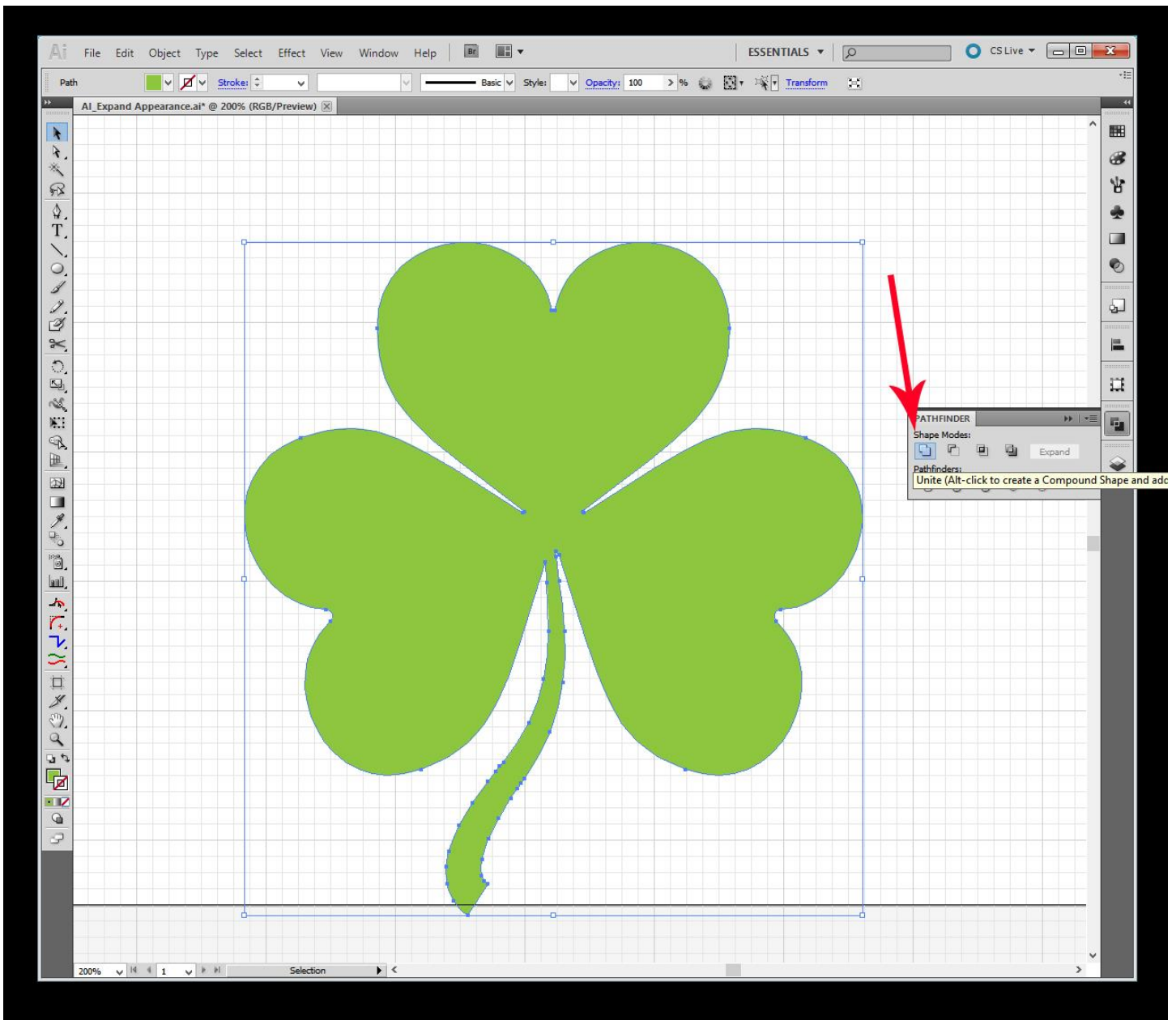**Clover Before**:

Clover After:

Stem Before:

Stem After:

Okay, now that the parts are **Expanded** correctly, we can **Unite** them. *(Pathfinder palette.)*

And that doesn't look too bad, all things considered.

But … I don't care much for the sharp insets next to the stem, and I'd like a more rounded appearance on it as well, so I'm going to apply a Rounding plugin to the areas and expand them again to take that out.
(Just one more repetition….not necessary if you followed what came before.)

Rounding is applied, select the clover, and then click **Object > Expand Appearance**:
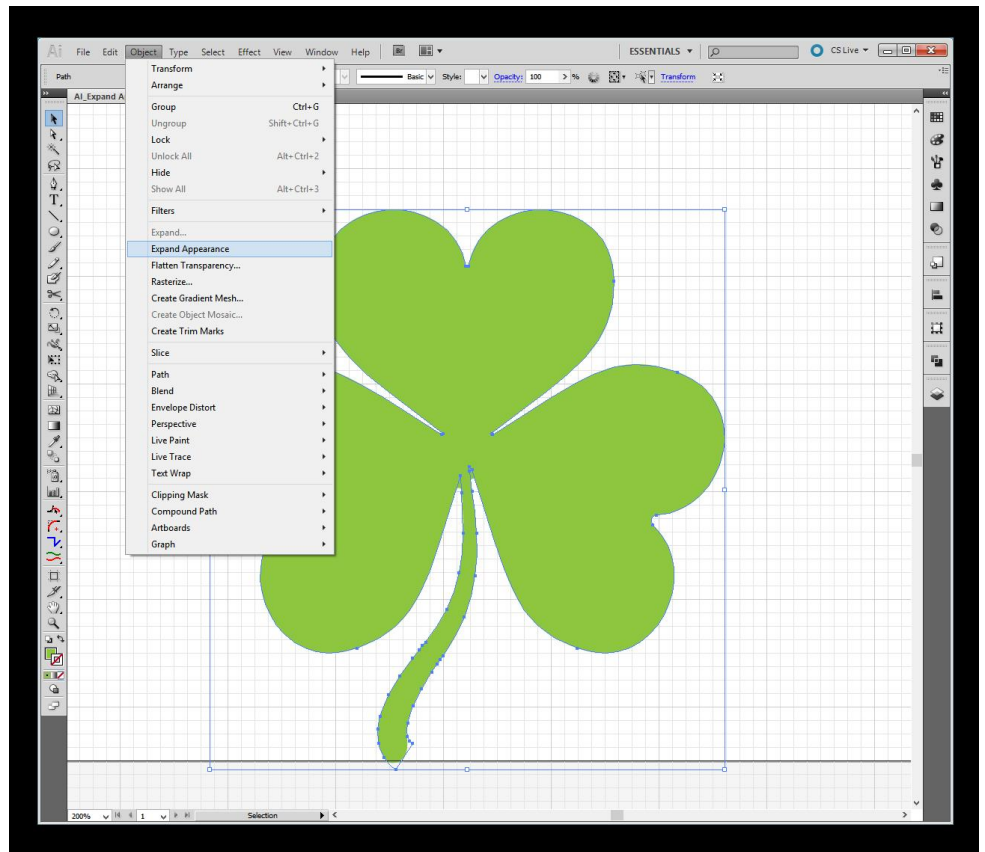
Done!

 Notice how the tip of the stem went from sharp to rounded after we expanded the appearance.