

Maple Rose, 2014

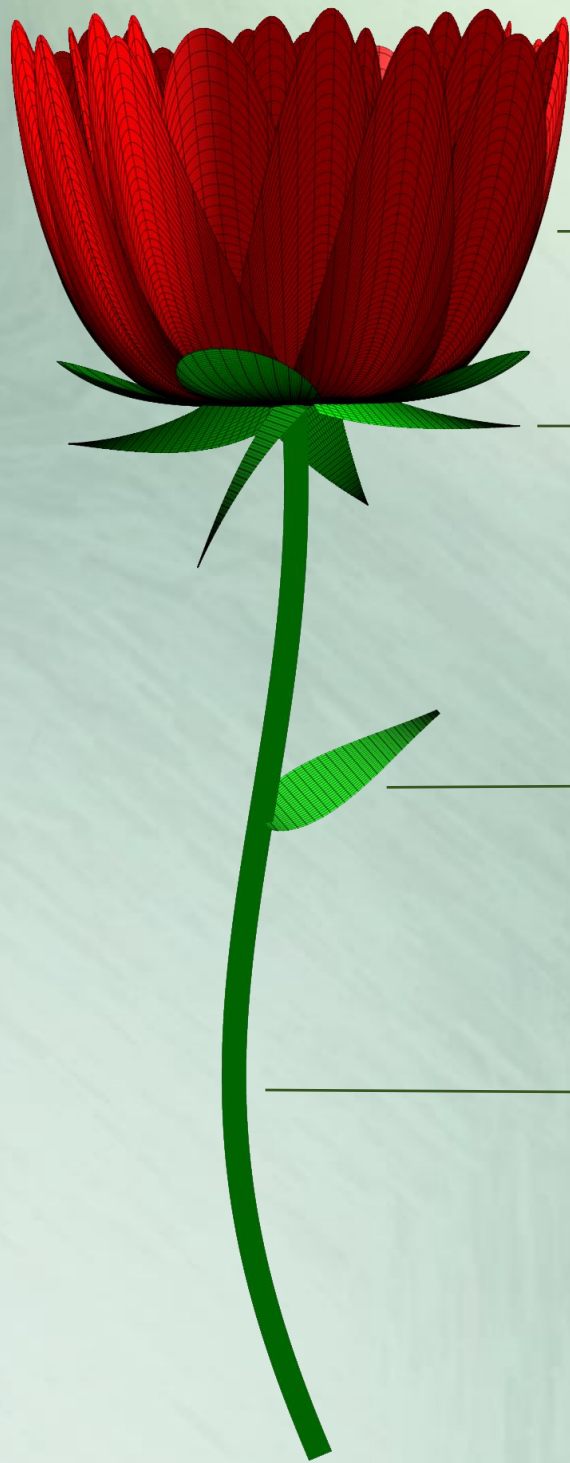
I learned Maple while teaching Calculus 3 at Elgin Community College in Elgin, IL in 2014. Inspired by one of my students, I challenged myself to create several Maple projects guiding my students to more fully understand Calculus 3 topics. One project involved the use of Maple's "Visualization of 3D Solid Regions" task. The solid region produced in this exercise looked much like the head of a flower.

I was inspired.

I opened a new Maple document and got to work. Using several cylindrical multivariable functions, I created the red petals. The helix stem was graphed using a vector-valued function space curve. The green leaves were parametric surfaces. This process took a very long time, as I had to get the ratios and placement of the flower's components just right. I'm especially excited about how the sepals turned out (green leaves under the head).

Working on this was not only therapeutic for me, but inspiring for my colleagues and students. It has been printed, matted, and framed in our Elgin Community College Math Department hallway.

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$$P_i(r, \theta) = \alpha_i r^4 (\sin^4(\theta) + \cos^4(\theta))$$
$$0 \leq r \leq \beta_i \cos(\gamma_i \theta + \delta_i)$$
$$0 \leq \theta \leq 2\pi$$

$$S_j(x, y) = (a_j x + b_j y) e^{k_j x} + c_j$$
$$m_j x + n_j \leq y \leq u_j x + v_j$$
$$d_j \leq x \leq f_j$$

$$L(x, y) = ax + by + c$$
$$|y| \leq (mx + n) \sqrt{fx^2 + gx + h} \pm k$$
$$p \leq x \leq q$$

$$T(t) = \rho t \langle \sin(\mu t), \cos(\mu t), -t \rangle$$
$$0 \leq t \leq 2.5$$