Parametric paint-off

1 Stem

Let

$$a(t) = 2t + 2\cos\left(\frac{45t}{2}\right) + \frac{2}{t},$$
$$b(t) = 2t + 2\sin\left(24t\right) + \frac{2}{t}$$

Define the stem as

$$(a(t)\cos(-2.8) - b(t)\sin(-2.8), a(t)\sin(-2.8) + b(t)\cos(-2.8)), \quad 0.5 \le t \le 15.9$$

2 Petals

Let

$$f(t) = \frac{5\sin\left(\frac{239t}{300}\right)}{\frac{3}{10} + \sin^2 t},$$
$$g(t) = 5\cos t \cdot \sin^4\left(\frac{49t}{25}\right)$$

Define the petals using the following four parametric equations:

$$\begin{aligned}
(f(t), g(t)), &\quad -150 \le t \le 150, \\
(g(t), f(t)), &\quad -150 \le t \le 150, \\
\left(\frac{f(t) - g(t)}{\sqrt{2}}, \frac{f(t) + g(t)}{\sqrt{2}}\right), &\quad -150 \le t \le 150, \\
\left(\frac{f(t) + g(t)}{\sqrt{2}}, \frac{-f(t) + g(t)}{\sqrt{2}}\right), &\quad -150 \le t \le 150,
\end{aligned}$$

3 Pistil

Define the pistil using the following two polar equations:

$$r = 3\sin\left(\frac{225}{71}\theta\right), \quad 0 \le \theta \le 24\pi,$$
$$r = \frac{27}{10}\sin(8\theta), \quad 0 \le \theta \le 2\pi$$