

$$Y_1(t) := 3 \cdot \sin(t)$$

$$X_1(t) := 3 \cdot \cos(t)$$

$$O := .25$$

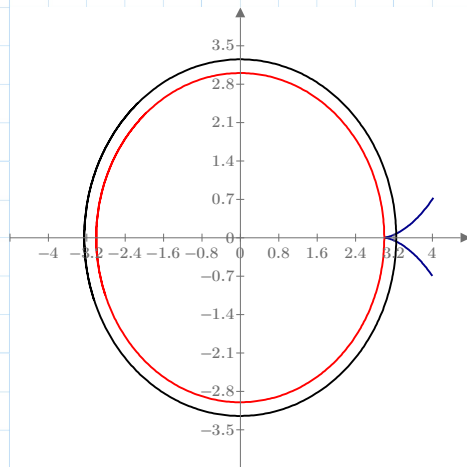
$$x_1(t) := \frac{d}{dt} X_1(t) \rightarrow -3 \cdot \sin(t) \quad y_1(t) := \frac{d}{dt} Y_1(t)$$

$$X_O(t) := \text{if} \left( \left( X_1(t) + \frac{O \cdot y_1(t)}{\left( x_1(t)^2 + y_1(t)^2 \right)^{\frac{1}{2}}} \right)^2 > \left( X_1(t) \right)^2, X_1(t) + \frac{O \cdot y_1(t)}{\left( x_1(t)^2 + y_1(t)^2 \right)^{\frac{1}{2}}}, X_1(t) - \frac{O \cdot y_1(t)}{\left( x_1(t)^2 + y_1(t)^2 \right)^{\frac{1}{2}}} \right)$$

$$Y_O(t) := \text{if} \left( \left( Y_1(t) + \frac{O \cdot x_1(t)}{\left( x_1(t)^2 + y_1(t)^2 \right)^{\frac{1}{2}}} \right)^2 > \left( Y_1(t) \right)^2, Y_1(t) + \frac{O \cdot x_1(t)}{\left( x_1(t)^2 + y_1(t)^2 \right)^{\frac{1}{2}}}, Y_1(t) - \frac{O \cdot x_1(t)}{\left( x_1(t)^2 + y_1(t)^2 \right)^{\frac{1}{2}}} \right)$$

$$X_{i1}(t) := X_1(t) - \frac{x_1(t)}{\left( x_1(t)^2 + y_1(t)^2 \right)^{\frac{1}{2}}} \cdot \int_0^t \left( \left( x_1(\tau)^2 + y_1(\tau)^2 \right)^{\frac{1}{2}} \right) d\tau \rightarrow 3 \cdot \cos(t) + \frac{9 \cdot t \cdot \sin(t)}{\sqrt{9 \cdot \cos(t)^2 + 9 \cdot \sin(t)^2}}$$

$$Y_{i1}(t) := Y_1(t) - \frac{y_1(t)}{\left( x_1(t)^2 + y_1(t)^2 \right)^{\frac{1}{2}}} \cdot \int_0^t \left( \left( x_1(\tau)^2 + y_1(\tau)^2 \right)^{\frac{1}{2}} \right) d\tau \rightarrow 3 \cdot \sin(t) - \frac{9 \cdot t \cdot \cos(t)}{\sqrt{9 \cdot \cos(t)^2 + 9 \cdot \sin(t)^2}}$$



$$\underline{Y_{i1}(t)}$$

$$\underline{Y_o(t)}$$

$$\underline{Y_1(t)}$$

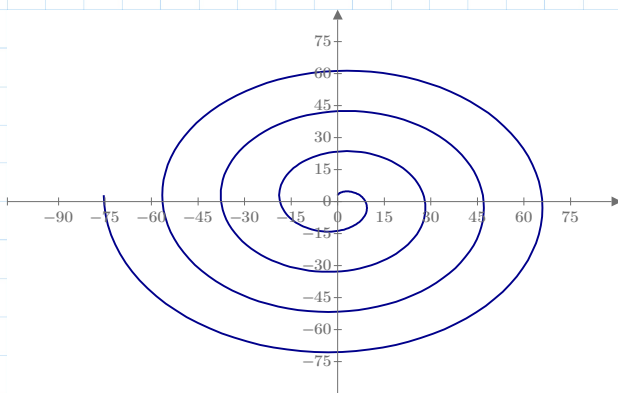
$$\underline{X_{i1}(t)}$$

$$\underline{X_o(t)}$$

$$\underline{X_1(t)}$$

$$n := 4$$

$$t := 0, \frac{\pi}{50} \dots n \cdot 2 \pi$$



$$\underline{3 \cdot \cos(t) + \frac{9 \cdot t \cdot \sin(t)}{\sqrt{9 \cdot \cos(t)^2 + 9 \cdot \sin(t)^2}}$$

$$\underline{3 \cdot \sin(t) - \frac{9 \cdot t \cdot \cos(t)}{\sqrt{9 \cdot \cos(t)^2 + 9 \cdot \sin(t)^2}}$$