

38(13) : Animation of a Log Spiral Orbit

In this case:

$$x = r(t) \cos \theta \quad - (1)$$

$$y = r(t) \sin \theta \quad - (2)$$

where

$$r(t) = \left(\frac{2dL_0 t}{m} \right)^{1/2} \quad - (3)$$

and

$$\theta(t) = \frac{1}{2d} \log_e \left(\frac{2dL_0 t}{m r_0^2} \right) \quad - (4)$$

where

$$r = r_0 \exp(d\theta) \quad - (5)$$

So

$$x = \left(\frac{2dL_0 t}{m} \right)^{1/2} \cos \left(\frac{1}{2d} \log_e \left(\frac{2dL_0 t}{m r_0^2} \right) \right) \quad - (6)$$

$$y = \left(\frac{2dL_0 t}{m} \right)^{1/2} \sin \left(\frac{1}{2d} \log_e \left(\frac{2dL_0 t}{m r_0^2} \right) \right) \quad - (7)$$

and animate (x, y) as a function of time t.
