Go to this Geogebra applet. This applet shows two different graphs, superimposed. One is a graph of the effective potential and the other is a graph of the actual orbit. The vertical axis is different for the two graphs. The position of the red dot in both graphs are coordinated in time. Your job is to explore why/how these two red dots are different in the two graphs.

You have two different sliders that control the values of the parameters ℓ and E and two sliders that control the animation.

Answer the following questions:

1. What physical system is being represented?

2. What objects are represented by the red dots?

3. What is the geometric meaning of the vertical axis in the two graphs?

4. What is the geometric meaning of the horizontal axis in the two graphs?

5. Why is the range of horizontal axis different in the two graphs?

6. What physical properties do the sliders control?

7. What are the classical turning points? Under what conditions will the particle be bound? Unbound?