May 26, 2010

On the Unit Parabola

Defining the unit parabola (**CSDA**©)**:**

Preliminary parametric definitions:

- Unit circle, {1Cos[t],1Sin[t]}.
- Unit parabola, $\left\{t, \frac{t^2}{-4p} + r\right\}$ **important** (p = r) always!
- Traditional (y) axis is system spin axis.
- Traditional (x) axis is system *plane* of rotation.

THE PLAYERS:

1. The unit circle radius will be (*r*).
2. The proportional builder of the parabola curve will be the number (*p*), where the distance of **F,** the focus to the section vertex will be (1*p*), the magnitude of the initial focal radius. The latus rectum of the section will be 4 (*p*).

The latus rectum of the curve is referred to frequently in mathematics and is a ratio builder to the complete curve (-2, focus, +2) on the (x) axis number line using a total of 4p to sum the whole latus rectum diameter. When we set the focus as center/focus of a **CURVED SPACE DIVISION ASSEMBLY** (**CSDA**©) we use the proportional building ratio of (r) as vertex radius and 2(r) as latus rectum radius.

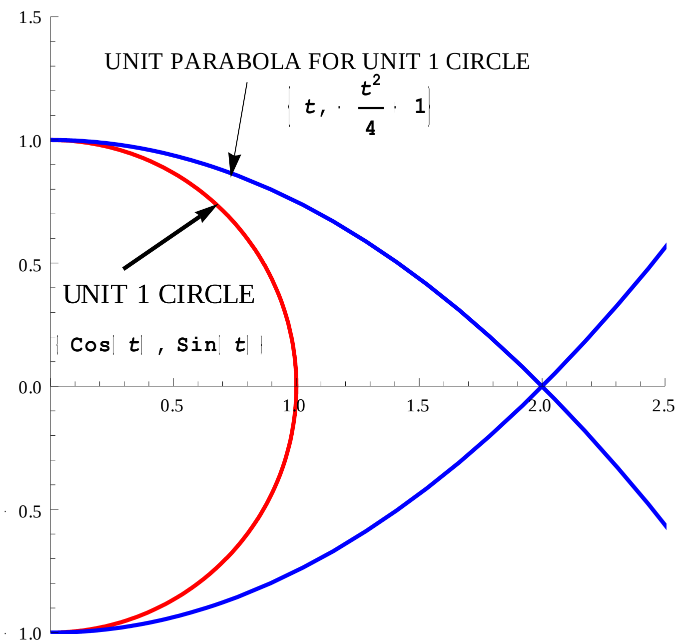
Proposition1. The unit parabola has (p) equal to (r) of the unit circle, for any unit (n).

The parametric description of a unit parabola constructed about a unit circle is:

$$\text{ParametricPlot}[\{\{\text{Cos}[t], \text{Sin}[t]\}, \left\{t, -\frac{t^2}{4} + 1\right\}, \left\{t, -\frac{t^2}{-4} - 1\right\}\},$$
$$\{t, 0, 2\pi\}, \text{PlotRange} \to \{\{0, \frac{5}{2}\}, \{-1, \frac{3}{2}\}\}]$$

Central relative studies of curves are best conducted with the unit circle as center of the system. My first construction will be a unit assembly for (n = 1}.

UNIT CIRCLE (r = 1) AND UNIT PARABOLA CONSTRUCTED ABOUT UNIT CIRCLE (R = 1).



Object Identification:

1. $\{\mathrm{Cos}[t], \mathrm{Sin}[t]\}$→parametric description of unit circle.
2. $\left\{t, -\frac{t^2}{4}+1\right\}, \left\{t, \frac{t^2}{4}-1\right\}$→parametric description of north and south unit (1) parabola.

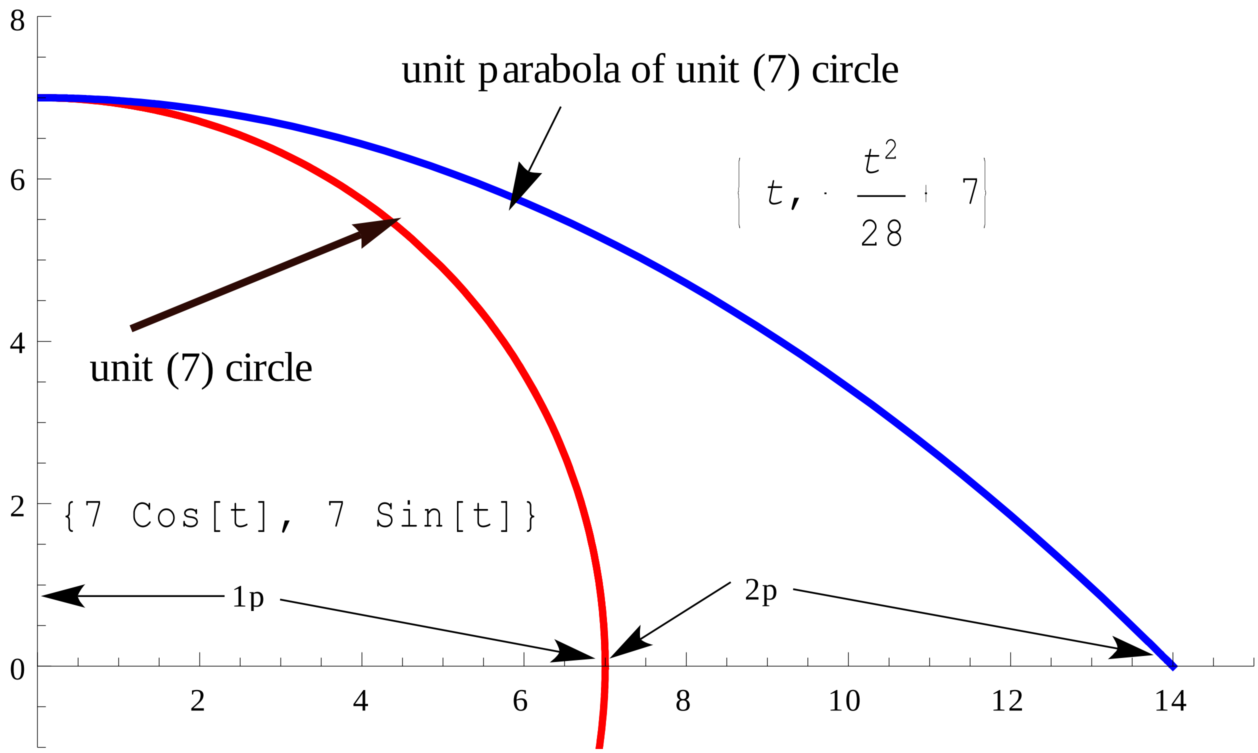
For convenience, I will use the north vertex of the Unit Parabola to study central relative energy curves. To study central relativity of these curves I named a unit circle unit parabola construction as a Sand Box Geometry **CSDA©** **(CURVED SPACE DIVISION ASSEMBLY)**. The reasoning for the word division in the description of the assembly will be developed when I explore counting measured magnitude of space with curves. What is important here is the fact that each assembly is a first quadrant resident, as central relative curves are always mirror symmetrical about system rotation and spin axis'.

My next construction will be a (**CSDA©**) for a unit (7) circle.

$$\mathrm{ParametricPlot}[\{\{7\mathrm{Cos}[t], 7\mathrm{Sin}[t]\}, \{t, -\frac{t^2}{28}+7\}\},$$

$$\{t, 0,14\}, \mathrm{PlotRange} \rightarrow \{\{0,15\}, \{-1,8\}\}]$$

UNIT (7) CIRCLE AND UNIT (7) PARABOLA (CSDA©)



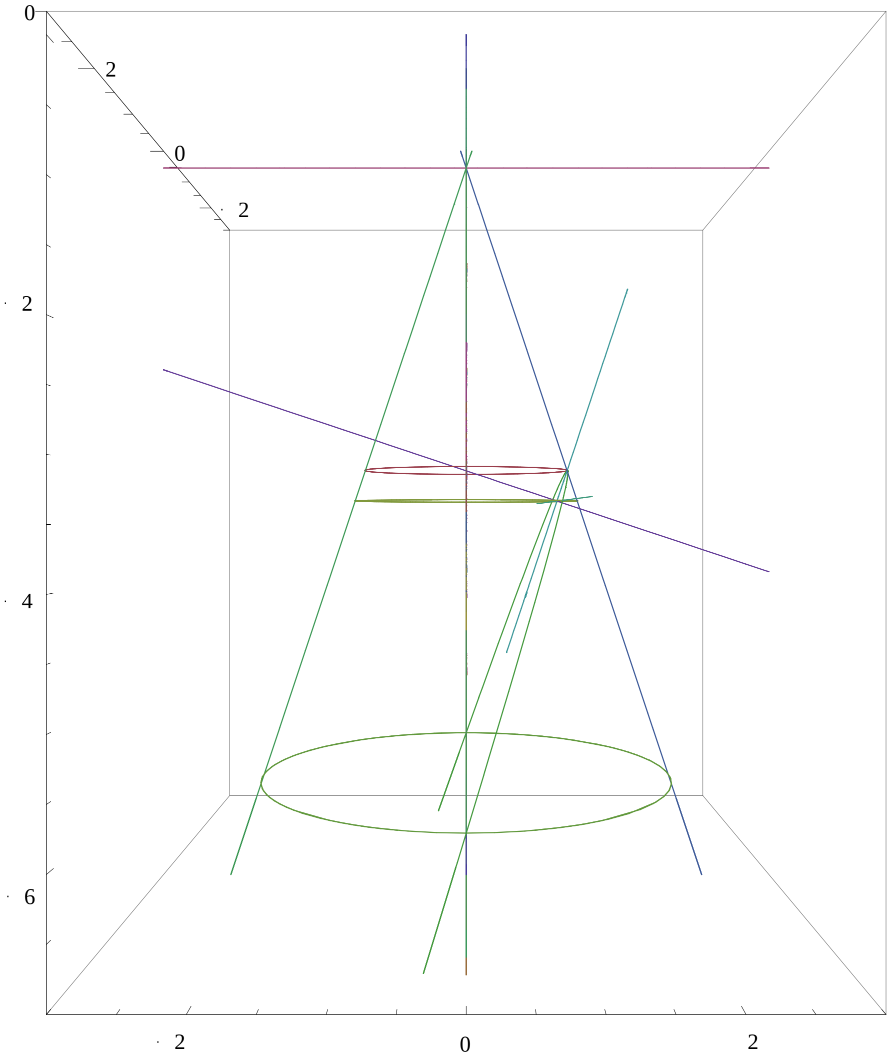
Object Identification:

1. $\{7\mathrm{Cos}[t], 7\mathrm{Sin}[t]\}$→Unit circle of unit (7) (**CSDA©**) system.
2. $\{t, -\frac{t^2}{28} + 7\}$→Unit parabola of unit (7) circle for a magnitude 7 (**CSDA©**) system.

SUMMARY ON CONSTRUCTING THE UNIT PARABOLA.

Eventually I intend to count changing (*initial to final curvature*) of time expanding spherical energy waves using a (**CSDA©**) system. To do this we need differential calculus to evaluate curvature. Differential curve analysis will require a twice differentiable function which the unit parabola happens to be. To this end, I intend to call the independent static (unchanging) curve the unit circle and the dependent dynamic (changing) curve the unit parabola; hence the independent and dependent variables of Differential Calculus analysis of curvature will be satisfied. I will show how the profile (**CSDA©**) unit parabola focal radius will meter changing spherical curvature of 3-space letting *Mathematica* do the mundane and error prone heavy lifting. My next post will be curve analysis of a (**CSDA©**).

Alexander; CEO Sand Box Geometry LLC



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