Object's Appearance In Near C Velocity

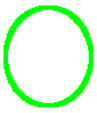
1. 2D Objects

2. 3D Objects

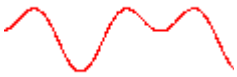
By:Raza Foroughi

1380/2/9

2D
Objects

1. 

2. 

3. 

First Page 3D Objects

First Page 2D Objects

$c := 3 \cdot 10^8$

Enter the vilacity of the object's cordinate system: $v := 0c$

Enter x coordinate of center: $x := 0$

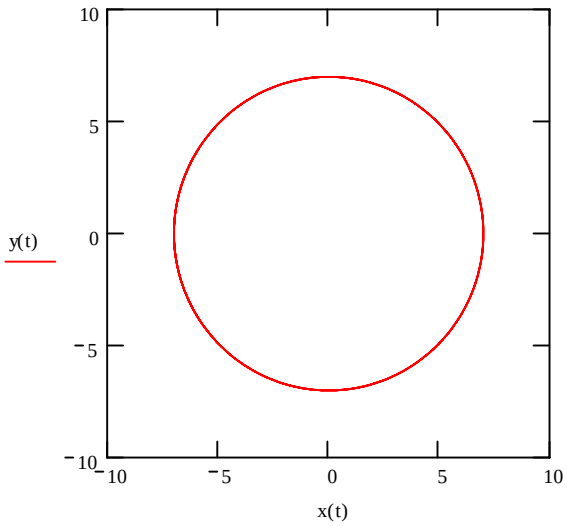
Enter y coordinate of center: $y := 0$

$$D := \sqrt{1 - \left(\frac{v}{c}\right)^2}$$

Enter radius: $r := 7$

Scale for plot: $s := 10$

$x(t) := (r \cdot \cos(t) + x) \cdot D$ $y(t) := r \cdot \sin(t) + y$



First Page 2D Objects

$c := 3 \cdot 10^8$

Enter the vilacity of the object's cordinate system: $v := 0.98c$

Enter x coordinate of center: $x := 0$

Enter y coordinate of center: $y := 0$

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Enter radius: $r := 7$

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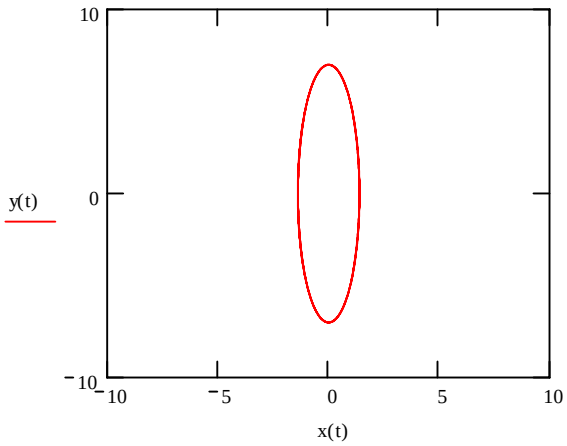

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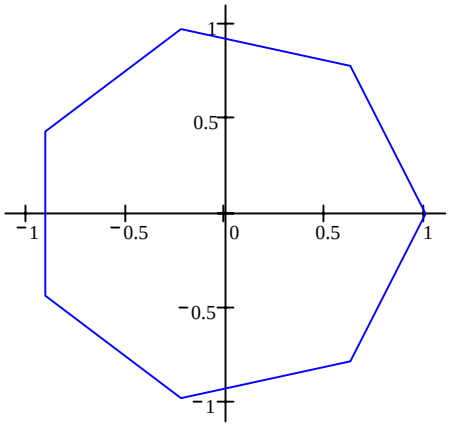
$$D := \sqrt{1 - \left(\frac{v}{c}\right)^2}$$

$N := 7$ Number of sides

$k := 0 .. N$

$$x_k := \left(\mathrm{Re}\left(e^{\frac{2\pi k i}{N}}\right)\right) \cdot D \qquad y_k := \mathrm{Im}\left(e^{\frac{2\pi k i}{N}}\right)$$



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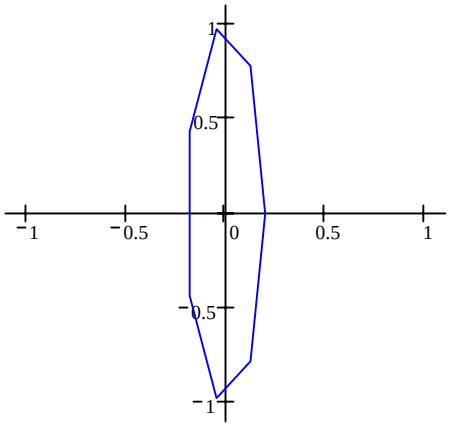


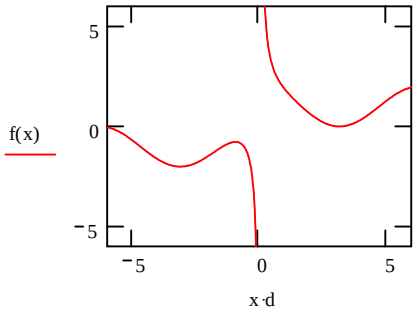
First Page 2D Objects

$c := 3 \cdot 10^8$

Enter the vilacity of the object's cordinate system: $v := 0c$

Enter the function you want to draw: $f(x) := \coth(x) + \cos(x)$

$$d := \sqrt{1 - \left(\frac{v}{c}\right)^2}$$



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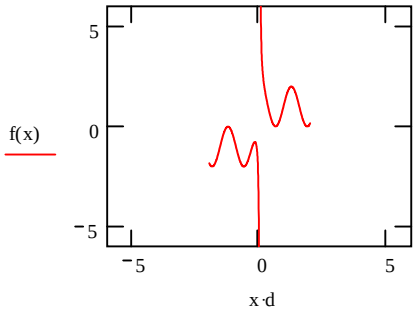
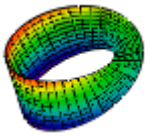


3D
Objects

1. 

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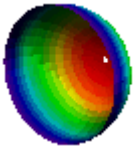
3. 

4. 

First Page 2D Objects

$c := 3 \cdot 10^8$

Enter the vilacity of the object's cordinate system: $v := 0c$

$$D := \sqrt{1 - \left(\frac{v}{c}\right)^2}$$

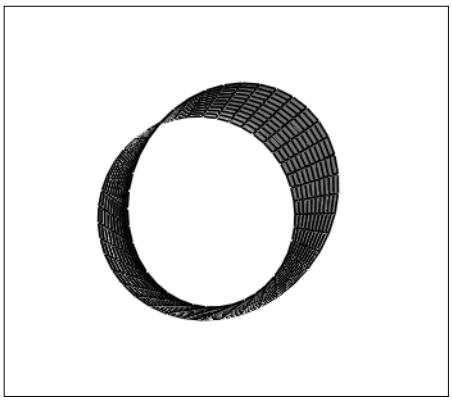
$w := 2$ Width of strip

$r := 2$ "Radius" of strip

$$x(u, v) := \left[\left(r + \frac{v}{2} \cdot \cos\left(\frac{u}{2}\right)\right) \cdot \cos(u)\right] \cdot D$$

$$y(u, v) := \left(r + \frac{v}{2} \cdot \cos\left(\frac{u}{2}\right)\right) \cdot \sin(u)$$

$$z(u, v) := v \cdot \sin\left(\frac{u}{2}\right)$$



(x, y, z)

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(x, y, z)

First Page 3D Objects

$c := 3 \cdot 10^8$

Enter the vilacity of the object's cordinate system: $v := 0c$

$$D := \sqrt{1 - \left(\frac{v}{c}\right)^2}$$

$R := 9$ $r := 2$

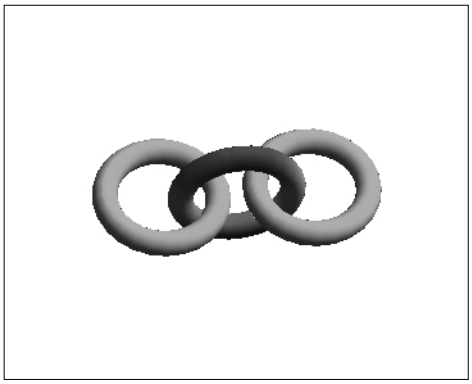
$x(u, v) := (R + r \cdot \cos(v)) \cdot \cos(u) \cdot D$

$y(u, v) := (R + r \cdot \cos(v)) \cdot \sin(u)$

$z(u, v) := r \cdot \sin(v)$

$x2(u, v) := [(R + r \cdot \cos(v)) \cdot \cos(u) + 6r] \cdot D$

$x3(u, v) := [(R + r \cdot \cos(v)) \cdot \cos(u) + 12r] \cdot D$



(x, y, z), (x2, z, y), (x3, y, z)

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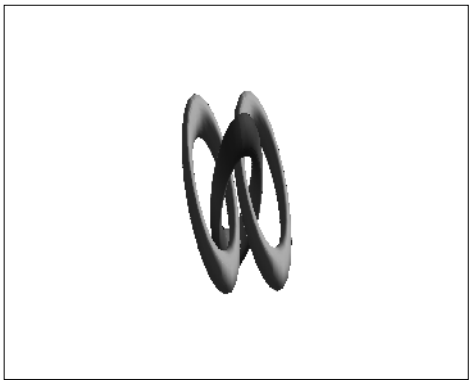


(x, y, z), (x2, z, y), (x3, y, z)

First Page 3D Objects

$c := 3 \cdot 10^8$

Enter the vilacity of the object's cordinate system: $v := 0c$

$$D := \sqrt{1 - \left(\frac{v}{c}\right)^2}$$

$mesh := 40$ Number of points generated

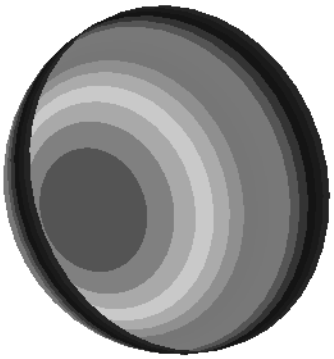
$xo(u, v) := R \cdot \sin(v) \cdot \cos(u) \cdot D$

$yo(u, v) := R \cdot \sin(v) \cdot \sin(u)$

Parametric description of outer surface

$zo(u, v) := R \cdot \cos(v)$

$$Outer := CreateMesh\left(xo, yo, zo, 0, 2\pi, 0, \frac{\pi}{2}, mesh\right)$$



Outer

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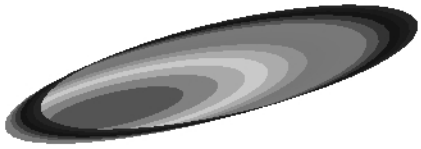


Outer

First Page 3D Objects

$c := 3 \cdot 10^8$

Enter the vilacity of the object's cordinate system: $v := 0.c$

$D := \sqrt{1 - \left(\frac{v}{c}\right)^2}$

$R := 6$ Radius of inner surface (a disk shaped terrain) and outer surface (a hemisphere).

$h := 0.8$ Vertical scale factor for inner surface ($0 \le h \le 1$)

$mesh := 40$ Number of points generated

$xi(u, v) := (v \cdot \cos(u)) \cdot D$

$yi(u, v) := v \cdot \sin(u)$

$zi(u, v) := h \cdot rnd(R - v) \cdot |\cos(v)|$

Parametric description of inner surface

$xo(u, v) := R \cdot \sin(v) \cdot \cos(u) \cdot D$

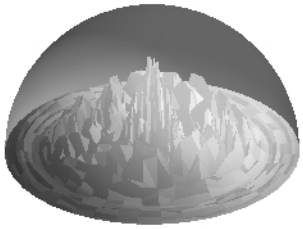
$yo(u, v) := R \cdot \sin(v) \cdot \sin(u)$

$zo(u, v) := R \cdot \cos(v)$

Parametric description of outer surface

$Inner := CreateMesh(xi, yi, zi, 0, 2\pi, 0, R, mesh)$

$$\text{Outer} := \text{CreateMesh}\left(\text{xo}, \text{yo}, \text{zo}, 0, 2\pi, 0, \frac{\pi}{2}, \text{mesh}\right)$$



Inner , Outer

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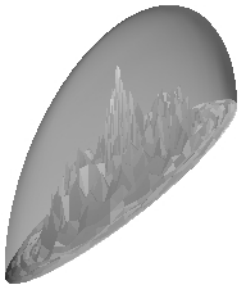

Inner , Outer