

$n := 360$	radiuses	Helixes step	
$t := 0, \frac{\pi}{n} .. 2\pi$	$R1 := 94.7219$	$h := 57.1558$	$t1 := \frac{\pi}{4} = 0.785$
	$R2 := 20$		

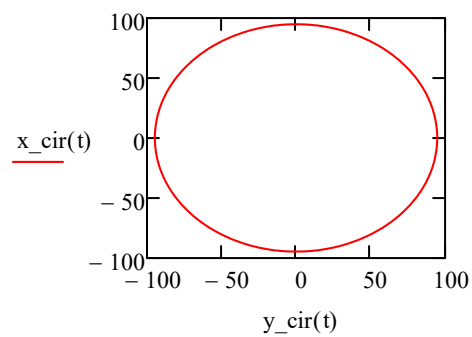
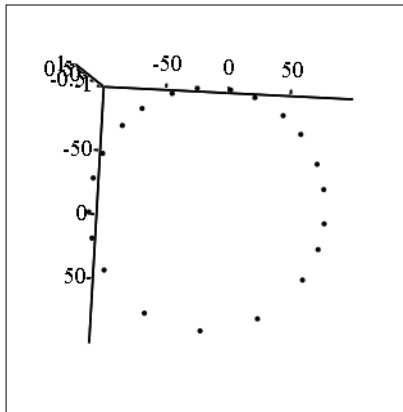
Parametric equations for a Circle

3D Point

$x_cir(t) := R1 \cdot \cos(t)$
 $y_cir(t) := R1 \cdot \sin(t)$
 $z_cir(t) := 0$

3D Vector

$x1_cir(t) := -R1 \cdot \sin(t)$
 $y1_cir(t) := R1 \cdot \cos(t)$
 $z1_cir(t) := 0$



(x_cir, y_cir, z_cir)

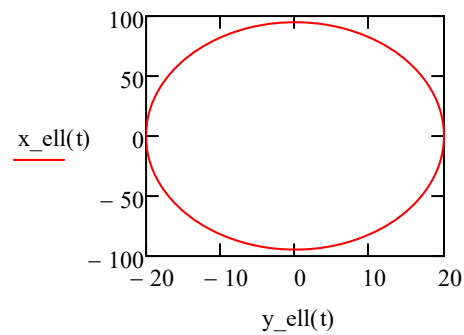
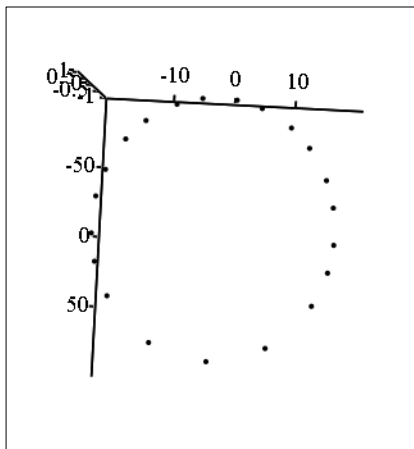
Parametric equations for a Ellipse

3D Point

$x_ell(t) := R1 \cdot \cos(t)$
 $y_ell(t) := R2 \cdot \sin(t)$
 $z_ell(t) := 0$

3D Vector

$x1_ell(t) := -R1 \cdot \sin(t)$
 $y1_ell(t) := R2 \cdot \cos(t)$
 $z1_ell(t) := 0$



(x_ell, y_ell, z_ell)

Parametric equations for a Helixes

3D Point $b := \frac{h}{(2 \cdot \pi)}$

$$x_{hel}(t) := R1 \cos(t)$$

$$y_{hel}(t) := R1 \sin(t)$$

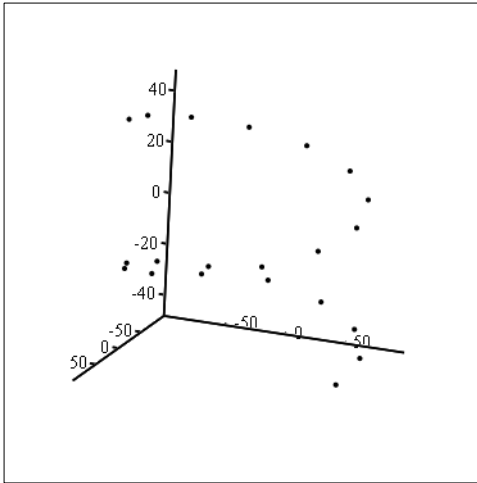
$$z_{hel}(t) := t \cdot b$$

3D Vector

$$x1_{hel}(t) := -R1 \sin(t)$$

$$y1_{hel}(t) := R1 \cos(t)$$

$$z1_{hel}(t) := b$$



(x_hel, y_hel, z_hel)

Checking data with the program

Circle

Point

$$x_{cir_{t1}} := R1 \cdot \cos(t1) = 66.978$$

$$y_{cir_{t1}} := R1 \cdot \sin(t1) = 66.978$$

Vector

$$x1_{cir_{t1}} := -R1 \cdot \sin(t1) = -66.978$$

$$y1_{cir_{t1}} := R1 \cdot \cos(t1) = 66.978$$

$$\frac{d}{dt1} x_{cir}(t1) = -66.978$$

$$\frac{d}{dt1} y_{cir}(t1) = 66.978$$

Ellipse

Point

$$x_{ell_{t1}} := R1 \cdot \cos(t1) = 66.978$$

$$y_{ell_{t1}} := R2 \cdot \sin(t1) = 14.142$$

Vector

$$x1_{ell_{t1}} := -R1 \cdot \sin(t1) = -66.978$$

$$y1_{ell_{t1}} := R2 \cdot \cos(t1) = 14.142$$

$$\frac{d}{dt1} x_{ell}(t1) = -66.978$$

$$\frac{d}{dt1} y_{ell}(t1) = 14.142$$

Helixes

3DPoint

$$x_{hel_{t1}} := R1 \cos(t1) = 66.978$$

$$y_{hel_{t1}} := R1 \sin(t1) = 66.978$$

$$z_{hel_{t1}} := t1 \cdot b = 7.144$$

3DVector

$$x1_{hel_{t1}} := -R1 \sin(t1) = -66.978$$

$$y1_{hel_{t1}} := R1 \cos(t1) = 66.978$$

$$z1_{hel_{t1}} := b = 9.097$$

$$\frac{d}{dt1} x_{hel}(t1) = -66.978$$

$$\frac{d}{dt1} y_{hel}(t1) = 66.978$$

$$\frac{d}{dt1} z_{hel}(t1) = 9.097$$