Create a "Monte Carlo ellipse"

$i := 0..100$

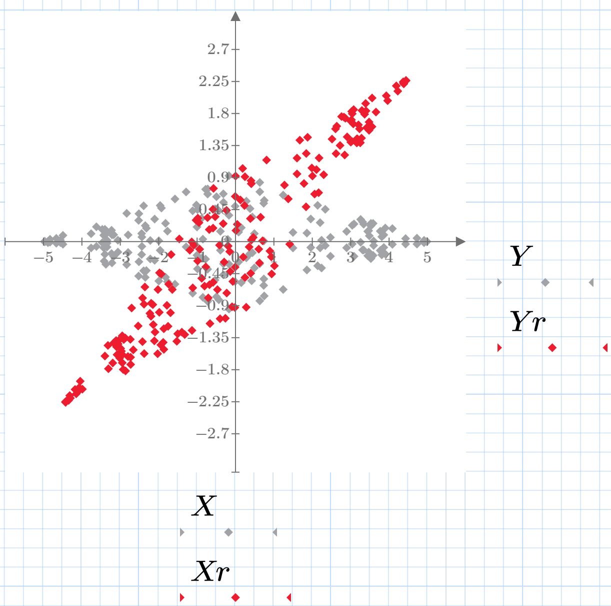
$x_i := 5 - \text{rnd}(10) \qquad y1_i := \dfrac{\text{rnd}\left(5 - \left|x_i\right|\right)}{5} \qquad y2_i := -\dfrac{\text{rnd}\left(5 - \left|x_i\right|\right)}{5}$

$X := \text{stack}(x, x) \qquad Y := \text{stack}(y1, y2) \qquad \phi := 27\ deg$

$j := 0..\text{rows}(X) - 1$

$$R = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$$

$Xr_j := X_j \cdot \cos(\phi) - Y_j \cdot \sin(\phi) \qquad Yr_j := X_j \cdot \sin(\phi) + Y_j \cdot \cos(\phi)$



Okay, it ain't pretty, but it'll do for demonstration

$xr_{max} := \max(Xr) = 4.441$

$xr_{min} := min(Xr) = -4.429$

$dmx := \text{match}\left(xr_{max}, Xr\right)_0 = 190$

$dmn := \text{match}\left(xr_{min}, Xr\right)_0 = 24$

$\theta := \text{atan}\left(\dfrac{Yr_{dmx} - Yr_{dmn}}{xr_{max} - xr_{min}}\right) = 26.966\ deg$

$Xrr_j := Xr_j \cdot \cos(-\theta) - Yr_j \cdot \sin(-\theta) \qquad Yrr_j := Xr_j \cdot \sin(-\theta) + Yr_j \cdot \cos(-\theta)$

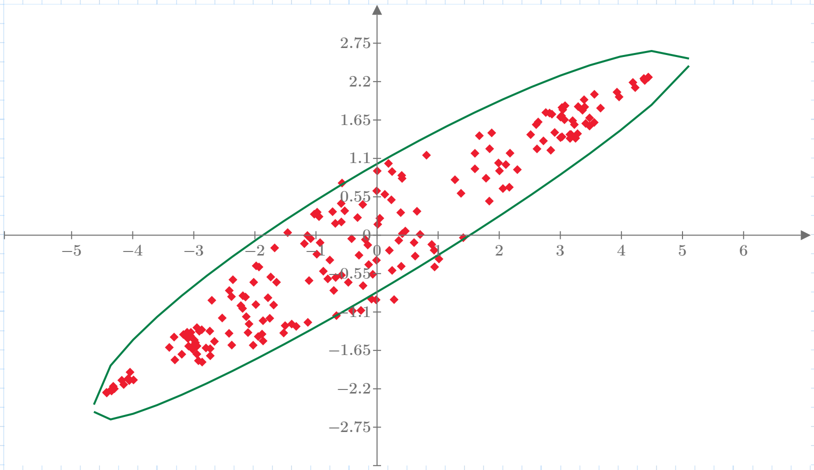
major axis: $mja := \max(Xrr) - min(Xrr) = 9.952 \qquad a := 1.1 \cdot \dfrac{mja}{2}$

minor axis: $mna := \max(Yrr) - min(Yrr) = 1.875 \qquad b := 1.1 \cdot \dfrac{mna}{2}$

$$y = \pm \frac{b}{a}\sqrt{a^2 - x^2}.$$

$Fn(x) := \dfrac{b}{a} \cdot \sqrt{a^2 - x^2}$

$xx := 1.1 \cdot min(Xrr), min(Xrr)..1.1 \cdot \max(Xrr)$



Yr

$xx \cdot \sin(\theta) + Fn(xx) \cdot \cos(\theta)$

$xx \cdot \sin(\theta) - Fn(xx) \cdot \cos(\theta)$

Xr

$xx \cdot \cos(\theta) - Fn(xx) \cdot \sin(\theta) + xr_{max} + xr_{min} + 0.25$