

Let x_1, y_1 be hoop location
 Let x_2, y_2 be Release Point
 Let x_3, y_3 be third point (can be nearly any point between the first 2)

Sub x_1, y_1 in $y = ax^2 + bx + c$

$$y_1 = ax_1^2 + bx_1 + c \quad \leftarrow \text{Remember this}$$

$$\begin{bmatrix} (x_1)^2 & x_1 & 1 \\ (x_2)^2 & x_2 & 1 \\ (x_3)^2 & x_3 & 1 \end{bmatrix} = \begin{bmatrix} \text{[scribbled out]} \\ 0 & 0 & 1 \\ (x_2)^2 & x_2 & 1 \\ (x_3)^2 & x_3 & 1 \end{bmatrix} = A$$

↑
Since Hoop is at $x=0$

$$A^{-1} \begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix} = A^{-1} \begin{bmatrix} 0 \\ y_2 \\ y_3 \end{bmatrix} = \begin{bmatrix} a \\ b \\ c \end{bmatrix}$$

$$y = a(x-b)^2 + c$$