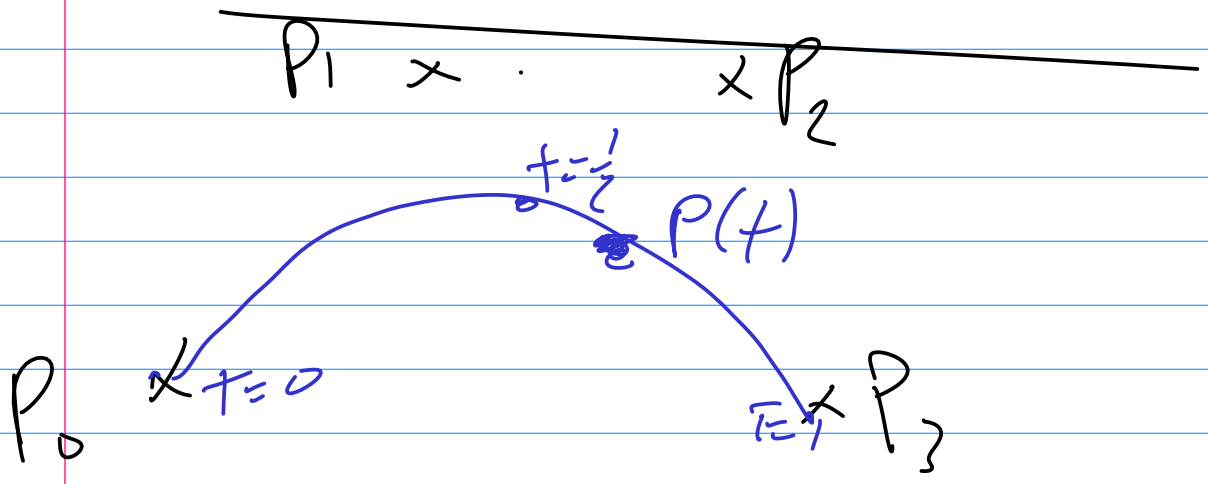


$$P(t) = \sum_{i=0}^{3} B_i(t) P_i$$

$$B_i(t) = \binom{3}{i} (1-t)^{3-i} t^i$$

$$B_0(t) = (1-t)^3$$

$$B_1(t) = 3(1-t)^2 t$$

$$B_2(t) = 3(1-t) t^2 \qquad B_3(t) = t^3$$

$$B_0\left(\tfrac{1}{4}\right) = \left(\tfrac{3}{4}\right)^3 \qquad B_1\left(\tfrac{1}{4}\right) = 3 \cdot \left(\tfrac{3}{4}\right)^2 \tfrac{1}{4}$$

$$P\left(\tfrac{1}{4}\right) = .42\,P_0 + .42\,P_1 + .14\,P_2 + .02\,P_3$$

$(0,0) \quad (0,1) \quad (1,1) \quad (1,0)$

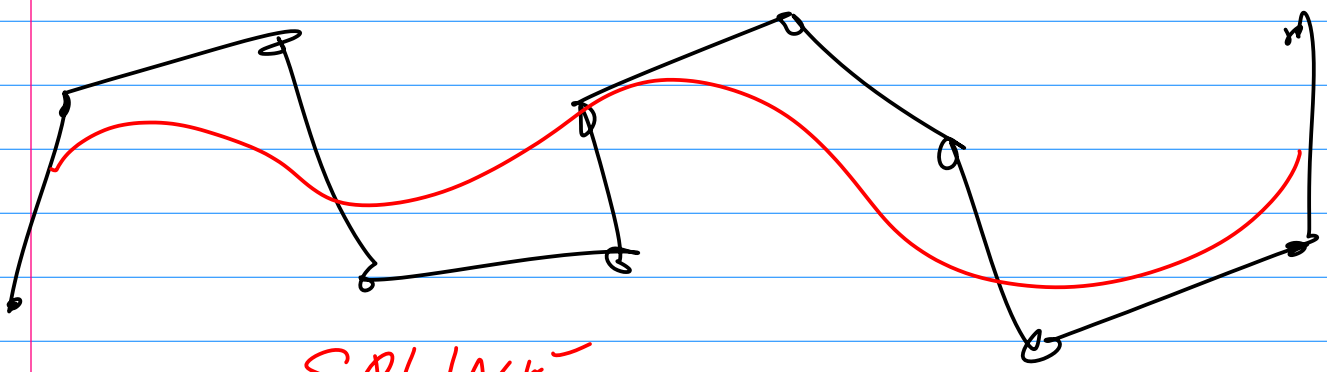
$$P\left(\tfrac{1}{4}\right) = (.16, .56)$$

(FOUR CONTROL POINTS)

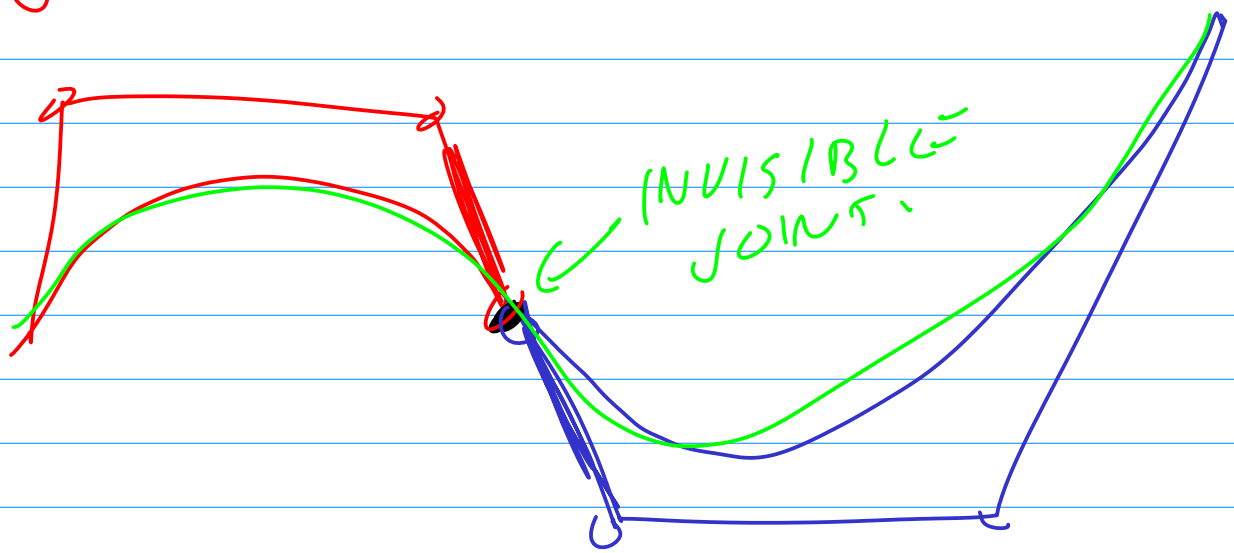
FOR MORE CONTROL POINTS,

UNUSUAL TO COMPUTE A SINGLE HIGHER-DEGREE CURVE
- DOESN'T HAVE LOCAL CONTROL

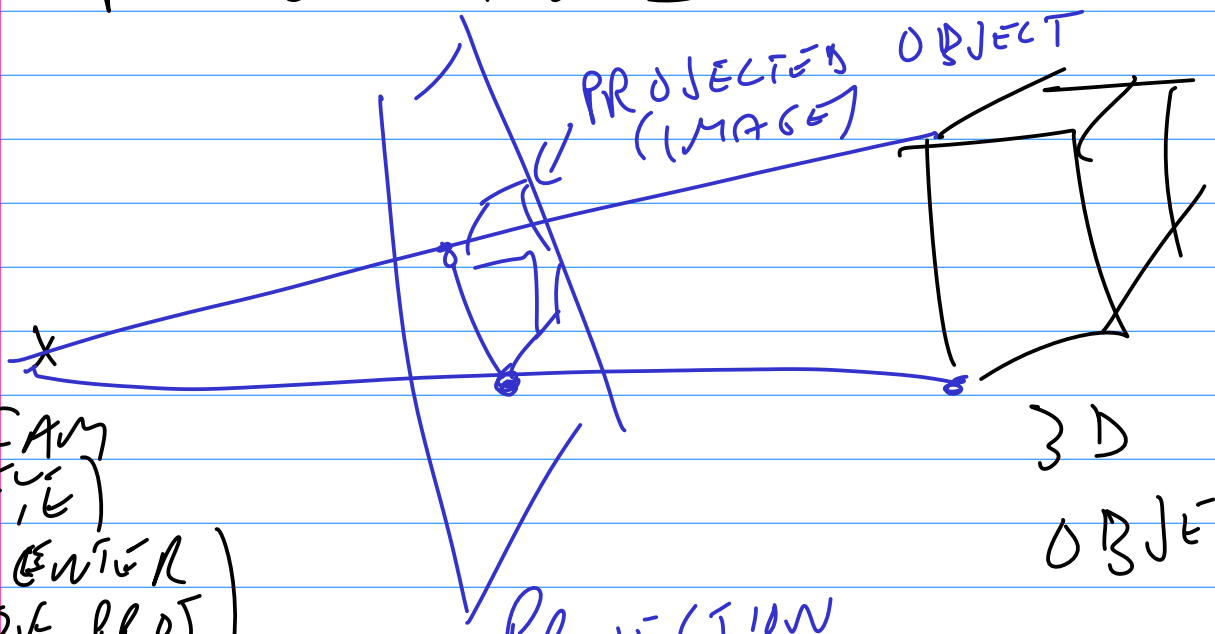
BETTER TO USE A SEQUENCE OF CUBICS THAT JOIN INVISIBLY

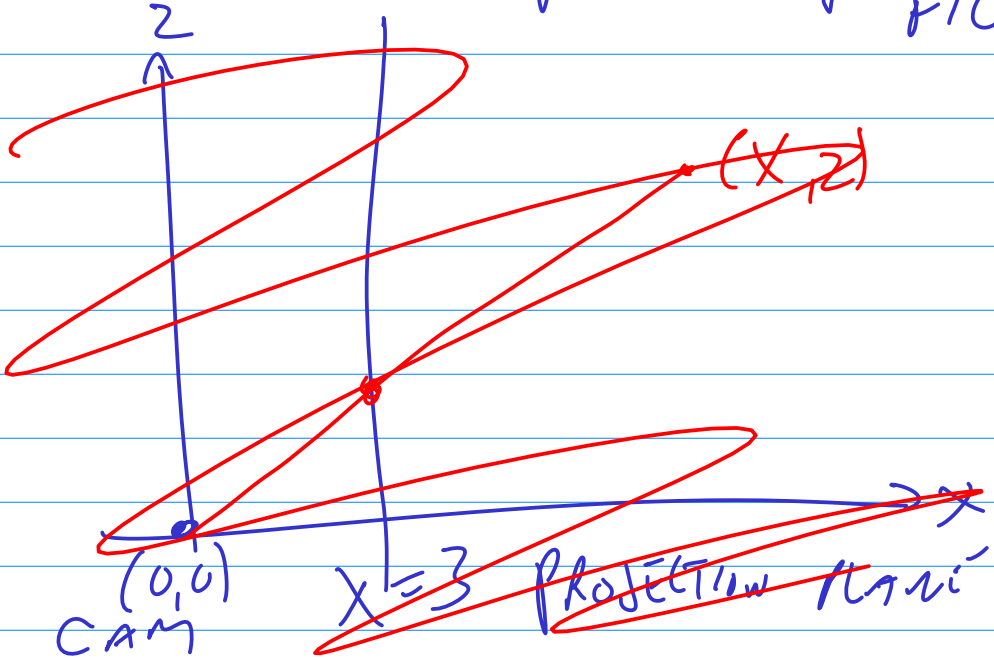


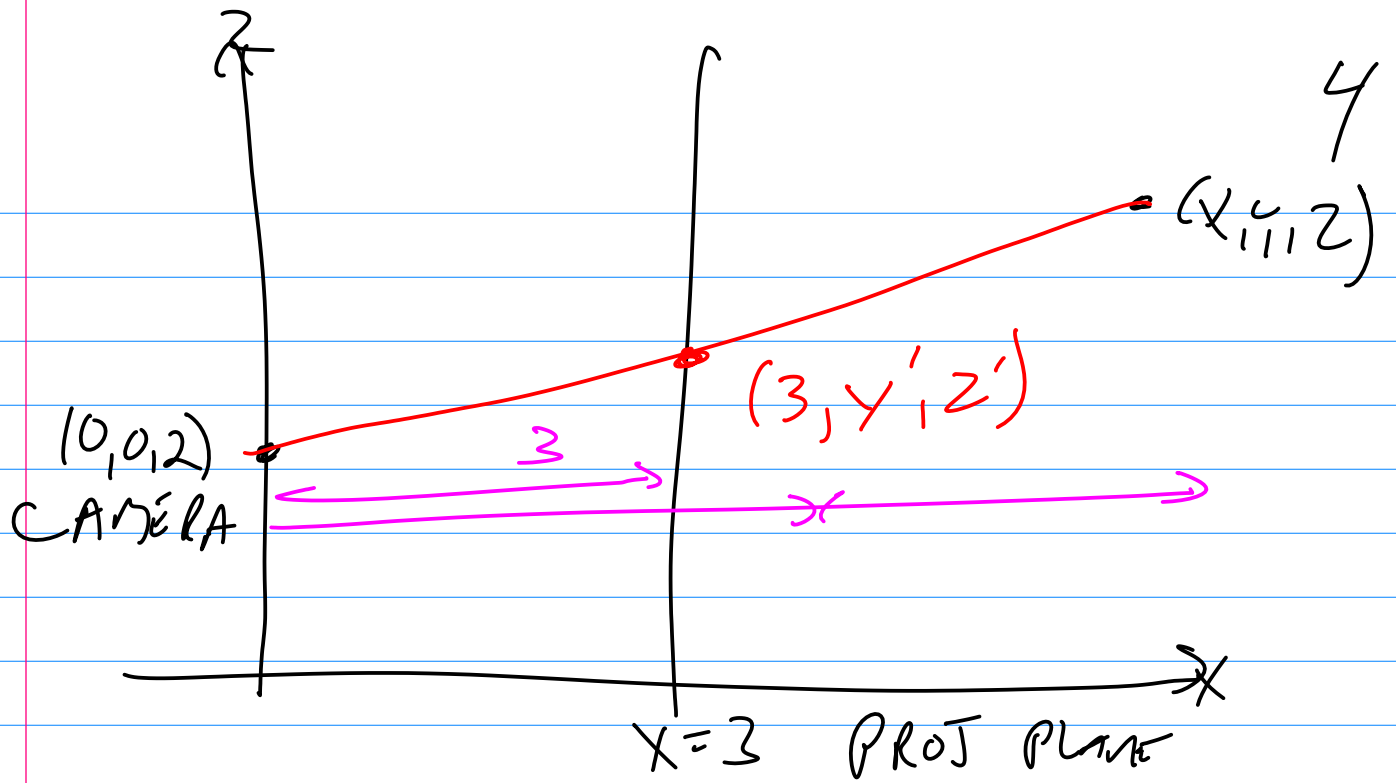
SPLINE
@ JOINT - TANGENT + CURVATURE MATCH.



PROJECTIONS







X SCALES BY $\frac{3}{x}$

Y SCALES BY $\frac{3}{x}$ $\quad y \to \frac{3}{x} y$

Z-2 SCALES THUS $\quad z \to (z-2)\frac{3}{x} + 2$

CARTES

$$\begin{pmatrix} x \\ y \\ z \\ w \end{pmatrix} \to \begin{pmatrix} 3 \\ \frac{3}{x} y \\ \frac{3}{x} z - \frac{6w}{x} + 2 \\ 1 \end{pmatrix}$$

NOW IN RIGHT SIDE, REPLACE x BY $\frac{x}{w}$ ETC

MAKE $w' = x$

$$= \begin{pmatrix} 3x \\ 3y \\ 3z - 6w + 2x \\ x \end{pmatrix}$$

HOM MATRIX

$$\begin{pmatrix} 3 & 0 & 0 & 0 \\ 0 & 3 & 0 & 0 \\ 2 & 0 & 3 & -6 \\ 1 & 0 & 0 & 0 \end{pmatrix}$$