

HOMOGENEOUS COORDS

$$\text{HC } \frac{3D}{(x, y, z, w)} \rightarrow \frac{\text{CART}}{\left(\frac{x}{w}, \frac{y}{w}, \frac{z}{w}\right)}$$

$$\text{eg } (1, 2, 3, 4) \rightarrow \left(\frac{1}{4}, \frac{2}{4}, \frac{3}{4}\right)$$

TRANSL BY (1, 2, 3)

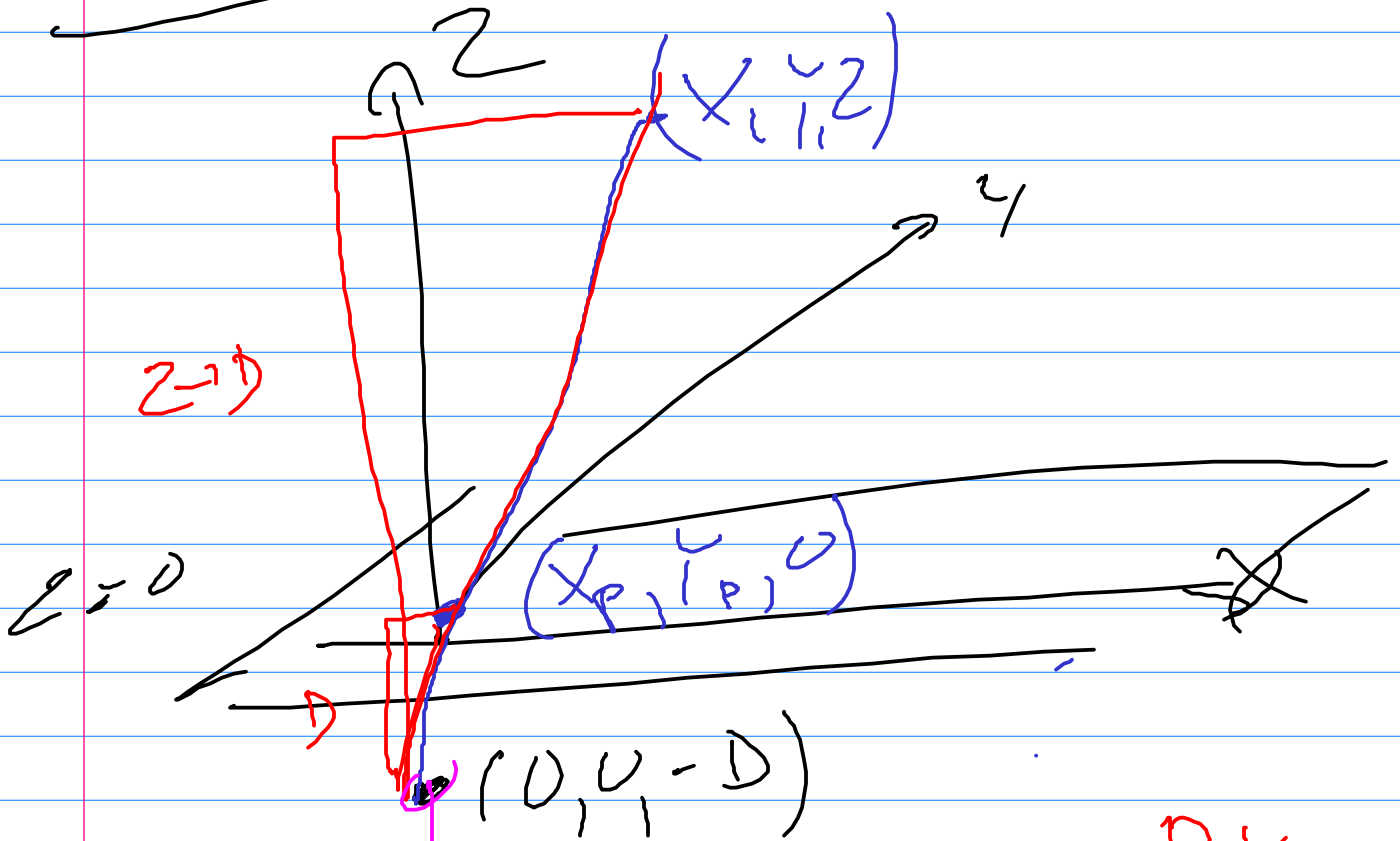
\equiv MULT BY HC

$$\begin{pmatrix} 6 \\ 8 \\ 10 \\ 1 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 3 \\ 0 & 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 1 \\ 6 \\ 7 \\ 1 \end{pmatrix}$$

as APPLD TO (5, 6) :
ANS = (6, 8, 10) :

PROJECTIONS

2



$$x_p = \frac{D}{z+D} x \quad y_p = \frac{D}{z+D} y$$

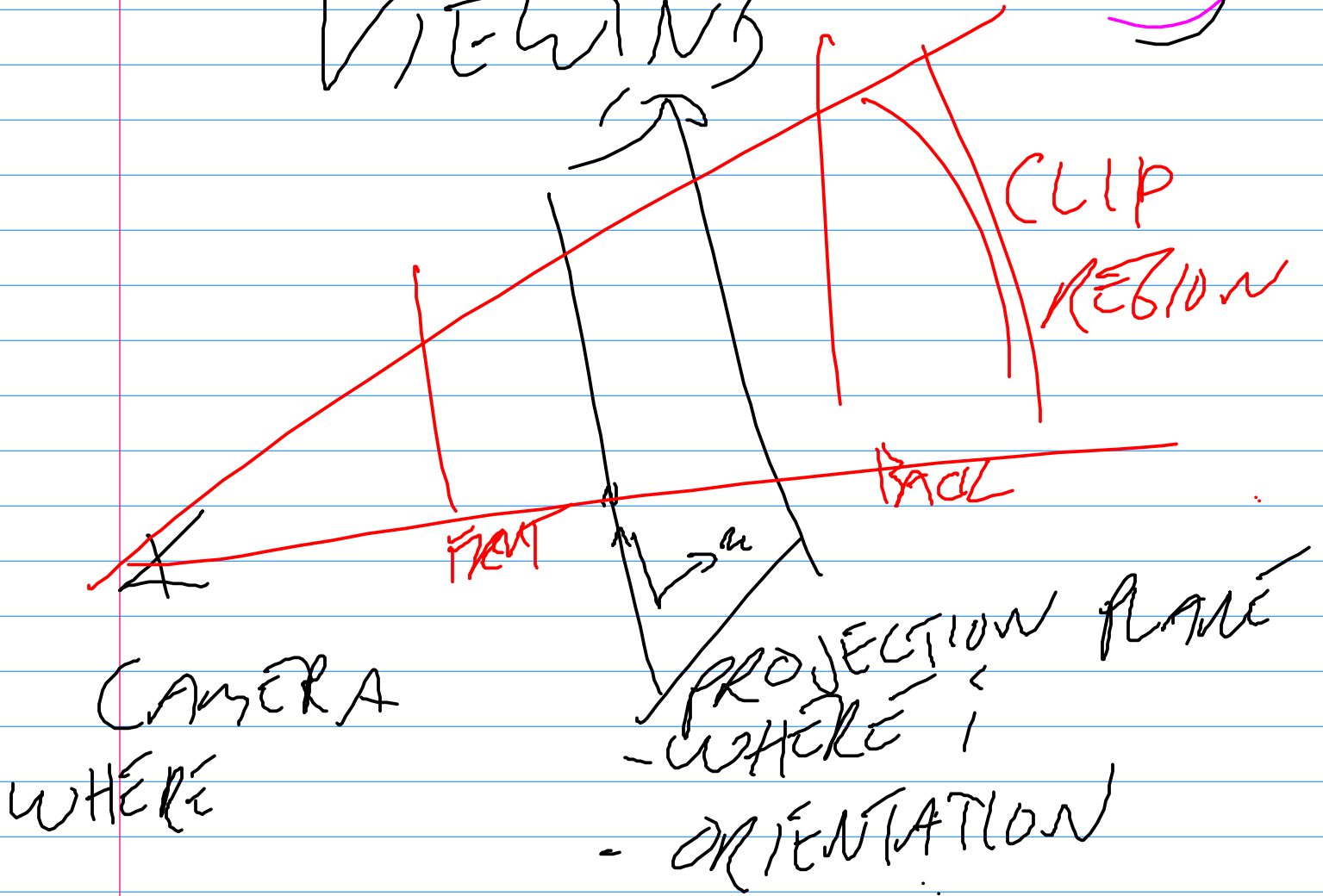
D GETS BIGGER. $z_0 = 0$

AS $D \rightarrow \infty$

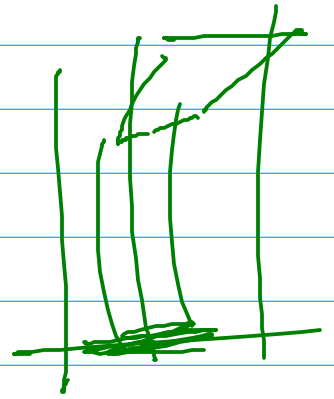
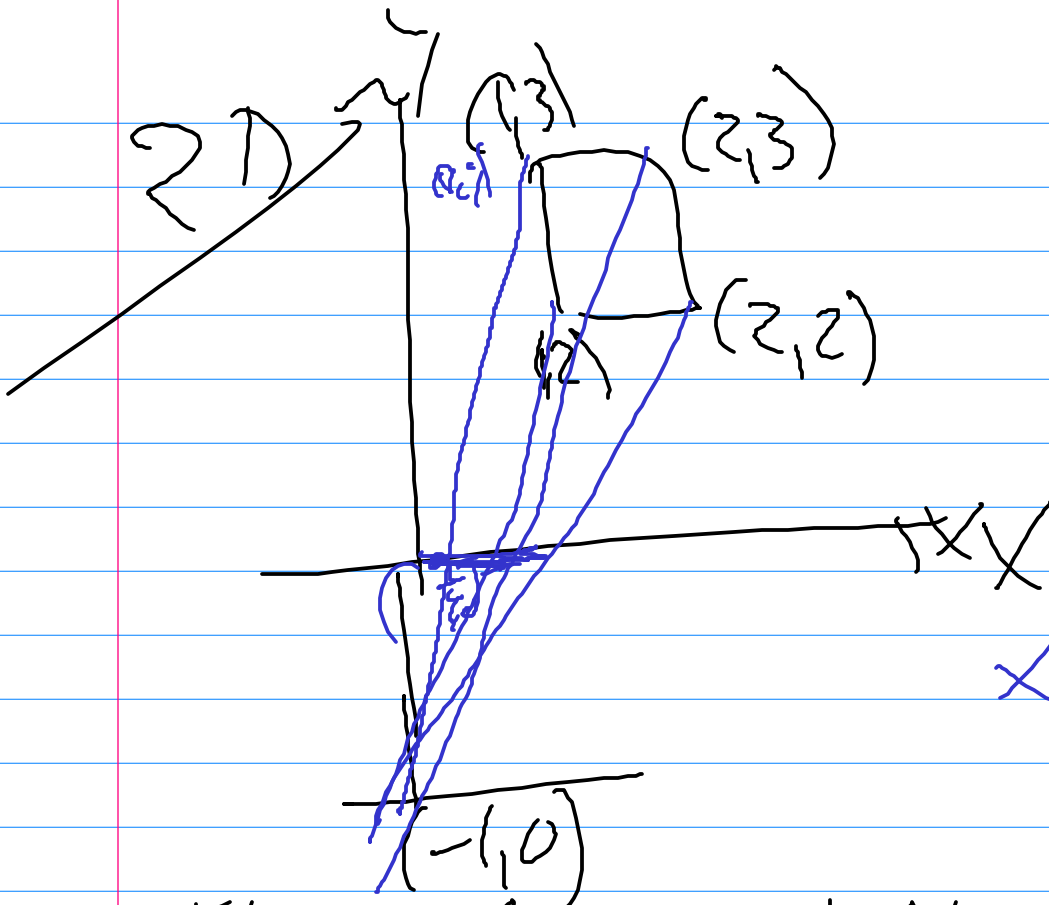
$$\underline{x_p \rightarrow x} \quad \underline{y_p \rightarrow y} \quad z_p = 0$$

VIEWING

3



4



$$x' = \frac{x}{H} \quad y' = 0$$

VIEW NORMALIZATION CHANGES THE OBJECT SO NEW OBJECT CAN BE PARALLEL PROJECTED AND GIVE SAME IMAGE.