Due: 8/31/01

Sketch the series of transformations for all 5 problems using both the "right to left" and "left to right" interpretations. Use a scale of 1 unit = 0.5 inches (or more).

Test the final transformation for all 5 problems with $\begin{bmatrix} x_1 \\ y_1 \\ 1 \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ 1 \end{bmatrix}$

1. Use $a_1 = 2$ units, $q = -45$ deg, $b_1 = 4$ units

$$\underline{p} = \begin{bmatrix} x_0 \\ y_0 \\ 1 \end{bmatrix} = \underline{T}_{X,a_1} \, \underline{T}_{Z,q} \, \underline{T}_{Y,b_1} \begin{bmatrix} x_1 \\ y_1 \\ 1 \end{bmatrix}$$

2. Same transformation as #1 above, except $q = +30$ deg

3. Use $q = 90$ deg, $a_1 = 3$ units, $b_1 = 3$ units

$$\underline{p} = \begin{bmatrix} x_0 \\ y_0 \\ 1 \end{bmatrix} = \underline{T}_{Z,q} \, \underline{T}_{X,a_1} \, \underline{T}_{Y,b_1} \begin{bmatrix} x_1 \\ y_1 \\ 1 \end{bmatrix}$$

4. Same transformation as #3 above, except $q = +30$ deg

5. Use $q_b = 45$ deg, $b_1 = 2$ units, $q_a = -45$ deg, $a_1 = 4$ units

$$\underline{p} = \begin{bmatrix} x_0 \\ y_0 \\ 1 \end{bmatrix} = \underline{T}_{Z,q_b} \, \underline{T}_{Y,b_1} \, \underline{T}_{Z,q_a} \, \underline{T}_{X,a_1} \begin{bmatrix} x_1 \\ y_1 \\ 1 \end{bmatrix}$$