Affine Transformation Motion Tutorial Exercise

Exercise

Consider a triangle on the (x, y) plane, whose original and final corner positions are $\mathbf{x}_k$, $\mathbf{x}'_k$, $k = 1, 2, 3$ respectively. Suppose that each corner moves by $\mathbf{d}_k$. If movements $\mathbf{d}_k$ can be expressed as affine transformations of $\mathbf{x}_k$, $k = 1, 2, 3$, determine the affine parameters that can result in such a mapping of $\mathbf{x}'_k$ relative to $\mathbf{x}_k$, $k = 1, 2, 3$.