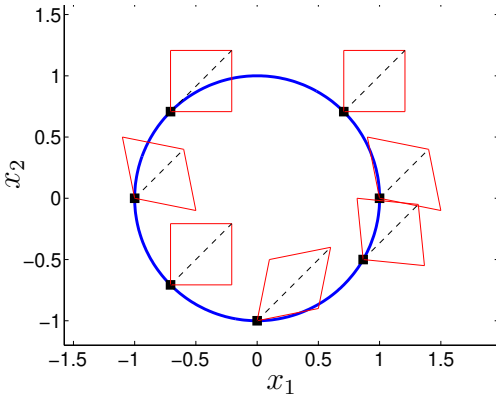


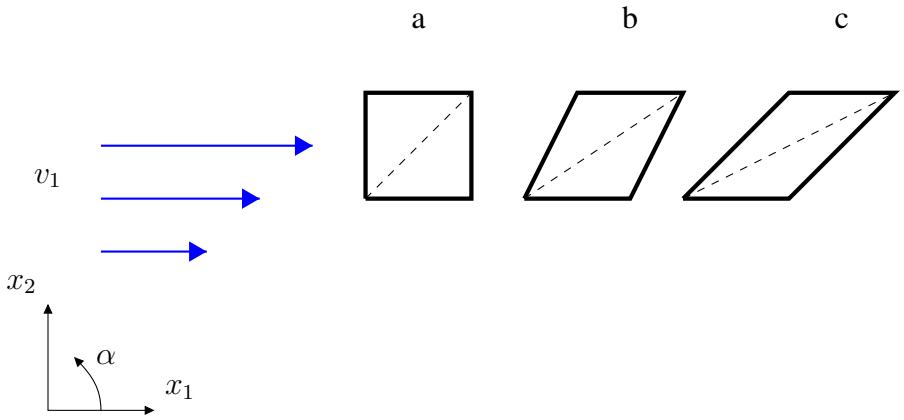
The fluid particle (i.e. its diagonal) does not rotate. The locations of the fluid particle is indicated by black, filled squares. The diagonals are shown as black dashed lines. The fluid particle is shown at $\theta = 0, \pi/4, 3\pi/4, \pi, 5\pi/4, 3\pi/2$ and $-\pi/6$.

¶See Section 1.7.2, Shear flow

▶Consider shear flow with $v_1 = cx_2^2$, $v_2 = 0$, see figure below. The vorticity is computed as

$$\omega_1 = \omega_2 = 0, \quad \omega_3 = \frac{\partial v_2}{\partial x_1} - \frac{\partial v_1}{\partial x_2} = -2cx_2$$

Hence the flow is rotational



The vertical edges of the fluid particles rotate according to the figure above (rotating in negative direction).

¶See Section 1.8, Eigenvalues and eigenvectors: physical interpretation