Step 1 out of 3

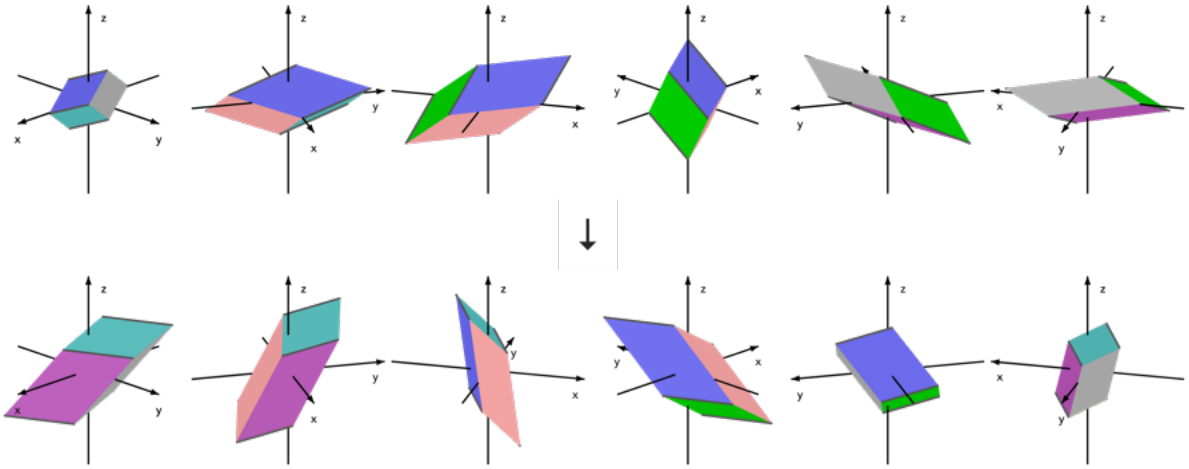
Using pivot $u = (A0)_{11}$ to zero target entry $t = (A0)_{31}$

This is a rotation in the coordinate plane spanned by $\vec{e}_3$ & $\vec{e}_1$

- $\rho = \sqrt{u^2 + t^2} = 0.952732911156112$
- $c = \frac{u}{\rho} = -0.3568681169913827$
- $s = \frac{t}{\rho} = -0.9341547768303842$

rotation transforms (u, t) to (ρ, 0)

$$A0 = \begin{bmatrix} -0.34 & 1.21 & -2.41 \\ -2 & 0.38 & -1.62 \\ -0.89 & 0.88 & 0.03 \end{bmatrix} \quad Q1 = \begin{bmatrix} \approx -0.357 & 0 & \approx -0.934 \\ 0 & 1 & 0 \\ \approx 0.934 & 0 & \approx -0.357 \end{bmatrix} \quad A1 = Q1\,A0 = \begin{bmatrix} \approx 0.953 & \approx -1.254 & \approx 0.832 \\ -2 & 0.38 & -1.62 \\ 0 & \approx 0.816 & \approx -2.262 \end{bmatrix}$$



Step 2 out of 3

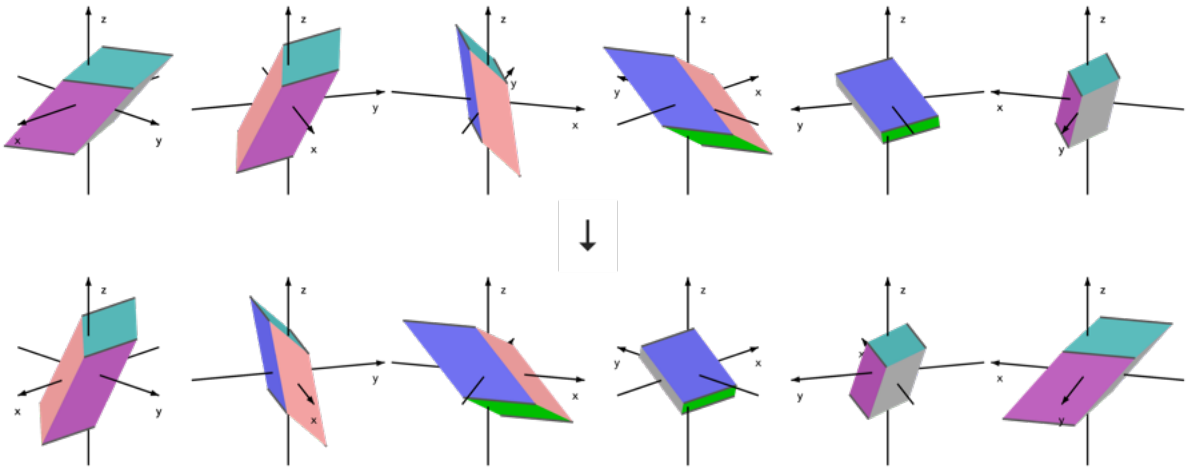
Using pivot $u = (A1)_{11}$ to zero target entry $t = (A1)_{21}$

This is a rotation in the coordinate plane spanned by $\vec{e}_2$ & $\vec{e}_1$

- $\rho = \sqrt{u^2 + t^2} = 2.2153329320894413$
- $c = \frac{u}{\rho} = 0.4300630832303479$
- $s = \frac{t}{\rho} = -0.9027988394113091$

rotation transforms (u, t) to (ρ, 0)

$$A1 = \begin{bmatrix} \approx 0.953 & \approx -1.254 & \approx 0.832 \\ -2 & 0.38 & -1.62 \\ 0 & \approx 0.816 & \approx -2.262 \end{bmatrix} \quad Q2 = \begin{bmatrix} \approx 0.43 & \approx -0.903 & 0 \\ \approx 0.903 & \approx 0.43 & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad A2 = Q2\,A1 = \begin{bmatrix} \approx 2.215 & \approx -0.882 & \approx 1.82 \\ 0 & \approx -0.969 & \approx 0.054 \\ 0 & \approx 0.816 & \approx -2.262 \end{bmatrix}$$



Step 3 out of 3

Using pivot $u = (A2)_{22}$ to zero target entry $t = (A2)_{32}$

This is a rotation in the coordinate plane spanned by $\vec{e}_3$ & $\vec{e}_2$

- $\rho = \sqrt{u^2 + t^2} = 1.2666638652119293$
- $c = \frac{u}{\rho} = -0.7646585561914218$
- $s = \frac{t}{\rho} = 0.6444356387128587$

rotation transforms (u, t) to (ρ, 0)

$$A2 = \begin{bmatrix} \approx 2.215 & \approx -0.882 & \approx 1.82 \\ 0 & \approx -0.969 & \approx 0.054 \\ 0 & \approx 0.816 & \approx -2.262 \end{bmatrix} \quad Q3 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & \approx -0.765 & \approx 0.644 \\ 0 & \approx -0.644 & \approx -0.765 \end{bmatrix} \quad A3 = Q3\,A2 = \begin{bmatrix} \approx 2.215 & \approx -0.882 & \approx 1.82 \\ 0 & \approx 1.267 & \approx -1.499 \\ 0 & 0 & \approx 1.695 \end{bmatrix}$$