

Laboratório Transformação Linear

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1. a transformação encolhe o quadrilátero central

2. $\begin{bmatrix} 2 & 0 \\ 0 & 5 \end{bmatrix}$

3. 1.

$$\begin{aligned} \det \left(\begin{bmatrix} \frac{1}{3} & 0 \\ 0 & \frac{1}{3} \end{bmatrix} - \lambda I \right) &= 0 \\ \det \left(\begin{bmatrix} \frac{1}{3} - \lambda & 0 \\ 0 & \frac{1}{3} - \lambda \end{bmatrix} \right) &= 0 \\ \left(\frac{1}{3} - \lambda \right)^2 &= 0 \\ \frac{1}{3} - \lambda &= 0 \\ \lambda &= \frac{1}{3} \end{aligned}$$

2.

$$\begin{aligned} \det \left(\begin{bmatrix} 2 & 0 \\ 0 & 5 \end{bmatrix} - \lambda I \right) &= 0 \\ \det \left(\begin{bmatrix} 2 - \lambda & 0 \\ 0 & 5 - \lambda \end{bmatrix} \right) &= 0 \\ (2 - \lambda)(5 - \lambda) &= 0 \\ \lambda &= 2 \text{ ou } \lambda = 5 \end{aligned}$$

4.

5.