$$\begin{bmatrix} 7 & -3 \\ 0 & 4 \end{bmatrix} \qquad \begin{aligned} 7x_1 - 3x_2 &= \lambda x_1 \\ 4x_2 &= \lambda x_2 \end{aligned}$$

$\lambda_1 = 7$, $u_1 = [1, 0]$ $\qquad$ $\lambda_2 = 4$, $u_2 = [\frac{1}{2}, \frac{1}{2}]$

$$\begin{bmatrix} 1 & \frac{1}{2} \\ 0 & \frac{1}{2} \end{bmatrix}$$

$(I - 5A)x = -5x.$ $\qquad$ $-4Ax = -2x.$

$-5Ax = -6x.$ $\qquad$ $A^{-1}x = 2x$

$\frac{5}{6}x = A^{-1}x.$

$-8 - 20 + 14 + 15$ $\qquad$ $-8 - 20 + 14 + 2$

$(A - 4I)^{-1} x = \lambda x.$

$\frac{1}{\lambda} x = (A - 4I)x$

$\lambda_1 = -\frac{1}{9}$ $\qquad$ $\lambda_2 = -\frac{1}{3}$

$-4, 9.$

$$\|e\| = \left|\frac{\overset{1}{\alpha_2}}{\alpha_1}\right| \left|\frac{\lambda_2}{\lambda_1}\right|^{\overset{(\frac{4}{9})^k}{k}} \|u_2\|$$

At least a factor of $10^{-n} \longrightarrow x.xxx \times 10^{-(k+1)}$

$$x_k = \frac{1}{\lambda_3^k}\left(\frac{\lambda_3^k}{\lambda_1^k}\alpha_1 u_1 + \frac{\lambda_3^k}{\lambda_2^k}\alpha_2 u_2 + \alpha_3 u_3\right)$$

$$\|e_k\| = \left|\frac{\alpha_2}{\alpha_3}\right|\left|\frac{\lambda_3^k}{\lambda_2^k}\right| \|u_2\| = \left|\frac{\lambda_3^k}{\lambda_2^k}\right| \|e_0\| = \left|\frac{\lambda_3^k}{\lambda_2^k}\right| \|x_0 - u\|$$

$$x_0 = \alpha_1 u_1 + \alpha_2 u_2 + \alpha_3 u_3$$

$$x_k = A^k x_0 = \lambda_1^k \alpha_1 u_1 + \lambda_2^k \alpha_2 u_2 + \lambda_3^k \alpha_3 u_3$$

$$9^k \qquad 7^k \qquad 6^k$$

$$= \lambda_1^k \left(\alpha_1 u_1 + \left(\frac{\lambda_2}{\lambda_1}\right)^k \alpha_2 u_2 + \left(\frac{\lambda_3}{\lambda_1}\right)^k \alpha_3 u_3\right)$$

$$Av = 9v.$$

$$v = \begin{bmatrix} 4 \\ 8 \\ 10 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix} \qquad \begin{vmatrix} 1-k & 2 \\ 2 & 3-k \end{vmatrix} \qquad 3 - 4k + k^2 - 4$$

$$k^2 - 4k - 1.$$

$$\frac{4 \pm \sqrt{16+4}}{2} = 2 \pm \sqrt{5}$$

$$A x_{k+1} = x_k.$$

$$PLU x_{k+1} = x_k.$$

$$L \underbrace{U x_{k+1}}_{y} = P^T x_k$$

$$Ly = P^T x_k$$
$$U x_{k+1} = y$$