



$$\sin(\theta - 120^\circ) = -\sin(\theta + 60^\circ)$$

$$= -\frac{1}{2}\sin\theta - \frac{\sqrt{3}}{2}\cos\theta$$

$$\cos(\theta - 120^\circ) = -\cos(\theta + 60^\circ)$$

$$= -\frac{1}{2}\cos\theta + \frac{\sqrt{3}}{2}\sin\theta$$

$$\sin(\theta + 210^\circ) = -\sin(\theta + 30^\circ) = -\frac{\sqrt{3}}{2}\sin\theta - \frac{1}{2}\cos\theta$$

$$\cos(\theta + 210^\circ) = -\cos(\theta + 30^\circ) = -\frac{\sqrt{3}}{2}\cos\theta + \frac{1}{2}\sin\theta$$

$$\begin{bmatrix} \cos\theta \\ \sin\theta \end{bmatrix} \begin{bmatrix} -\frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & -\frac{\sqrt{3}}{2} \end{bmatrix}$$

$$\sin(\theta - 210^\circ) = -\sin(\theta - 30^\circ) = -\frac{\sqrt{3}}{2}\sin\theta + \frac{1}{2}\cos\theta$$

$$\cos(\theta - 210^\circ) = -\cos(\theta - 30^\circ) = -\frac{\sqrt{3}}{2}\cos\theta - \frac{1}{2}\sin\theta$$

$$\begin{bmatrix} -\frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & -\frac{\sqrt{3}}{2} \end{bmatrix}$$

$$A \begin{bmatrix} \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{bmatrix} = \begin{bmatrix} 3 \\ 3 \end{bmatrix} \quad A \begin{bmatrix} -\frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{bmatrix} = \begin{bmatrix} -2 \\ 2 \end{bmatrix}$$

$$a_{11} + a_{12} = 3\sqrt{2} \quad - \quad a_{11} + a_{12} = -2\sqrt{2}$$

$$a_{21} \frac{\sqrt{2}}{2} + a_{22} \frac{\sqrt{2}}{2} = 3 \quad -\frac{\sqrt{2}}{2} a_{21} + \frac{\sqrt{2}}{2} a_{22} = 2$$

$$a_{12} = \frac{\sqrt{2}}{2} \quad a_{11} = \frac{5\sqrt{2}}{2}$$

$$a_{22} = \frac{5\sqrt{2}}{2} \quad a_{21} = \frac{\sqrt{2}}{2}$$

$$\begin{bmatrix} \frac{5\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & \frac{5\sqrt{2}}{2} \end{bmatrix}$$

$$\left(\frac{5}{2}\sqrt{2} - \lambda\right)^2 = \frac{1}{2}$$

$$\frac{5}{2}\sqrt{2} - \lambda = \pm \frac{\sqrt{2}}{2}$$

$$\lambda_1 = 2\sqrt{2}$$

$$\lambda_2 = 3\sqrt{2}$$

$$x + y = 7$$

$$x = 3 \quad y = 4$$

$$x - y = -1$$

$$2 - \underline{0.03125} \quad 2^{-5}$$

$$2^0$$

$$\underline{(1.111)2^0} \quad 1.875$$

$$1.96875$$

$$\frac{4}{4}$$

$$0.$$

$$2^2 + 0.2^1 + 0.2^0 + 1.2^{-1} + 1.2^{-2}$$

$$\underline{4.5} \\ 4.75$$

$$X = \begin{bmatrix} \vdots \\ 1 \end{bmatrix} \xrightarrow{\text{converting}} X'$$

$$\text{relative error} = \frac{\|X - X'\|_1}{\|X\|_1}$$

$$\begin{matrix} 1+0.5 \\ 1+0.5 \end{matrix} \quad \begin{bmatrix} 0.125 \\ 0 \end{bmatrix}$$

$$1x + 1y = 23$$

$$2x + 5z = 117$$

$$3y = 21$$

$$y = 7$$

$$x = 16$$

$$z = 17$$

$$\begin{matrix} 1 & 1 & 3 \\ 0 & 1 & 2 \\ 0 & 0 & 0 \end{matrix} \quad r_q^{(j)} = \frac{1}{m} \sum_{i=0}^{m-1} a_i^{(q)} p_i^{(j)}$$

$$\begin{matrix} 0 & 1 & 2 \\ 0 & 0 & 0 \end{matrix}$$

$$\begin{matrix} 0 & 0 & 0 \end{matrix}$$

$$P^{(j)} = \text{np.linalg.solve}(A^{(q)}, m R_i^{(j)})$$

$$p_1 x_1 + p_2 x_2 + p_3 x_3 = b_1$$