Вар 15       Задание 24

$$x = \frac{e_2 - e_3 - e_4}{2} + \frac{e_6}{3} \qquad y = \frac{e_6 - e_4}{2}$$

$$x - y = \frac{e_2}{2} - \frac{e_3}{2} - \frac{e_4}{2} + \frac{e_4}{2} + \left(\frac{1}{3} - \frac{1}{2}\right)e_6 = \frac{e_2}{2} - \frac{e_3}{2} + \left(-\frac{1}{6}\right)e_6$$

$$\rho(x,y) = \|x - y\| = \sqrt{(x-y, x-y)}$$

$$\rho(x,y) = \sqrt{\left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^2 + \left(\frac{1}{6}\right)^2} = \sqrt{\frac{1}{4} + \frac{1}{4} + \frac{1}{36}} = \sqrt{\frac{19}{36}} = \frac{\sqrt{19}}{6}$$

Ответ: $\dfrac{\sqrt{19}}{6}$.

Вар 15       Задание 25

$$x = 18\left(\frac{e_4}{9} + \frac{5e_1}{6} - \frac{e_{67}}{2}\right) \qquad y = 5\left(e_1 - \frac{3e_{67}}{5}\right) \qquad \varphi = \angle(x,y)$$

$$\cos\varphi = \frac{(x,y)}{\|x\| \cdot \|y\|}$$

$$(x,y) = \left(\frac{18 \cdot 5}{6} \cdot 5\right) + \left(-\frac{18}{2}\right) \cdot \left(-\frac{15}{5}\right) = 75 + 27 = 102$$

$$\|x\| = \sqrt{\left(\frac{18}{9}\right)^2 + \left(\frac{18 \cdot 5}{6}\right)^2 + \left(\frac{18}{2}\right)^2} = \sqrt{4 + 225 + 81} = \sqrt{310}$$

$$\|y\| = \sqrt{5^2 + \left(\frac{15}{5}\right)^2} = \sqrt{25 + 9} = \sqrt{34}$$

$$\cos\varphi = \frac{102}{\sqrt{310} \cdot \sqrt{34}} = \frac{3\sqrt{2635}}{155}$$

$$\varphi = \arccos\left(\frac{3\sqrt{2635}}{155}\right)$$