

14.9 1)

$$\frac{\varepsilon\varphi(\pi - \omega) \cdot \sigma\varphi(3\pi + \omega) \cdot \varepsilon\varphi(4\pi - \omega) \cdot \varepsilon\varphi\left(\frac{5\pi}{2} - \omega\right)}{\varepsilon\varphi(5\pi + \omega) \cdot \sigma\varphi(7\pi - \omega) \cdot \sigma\varphi(-\omega) \cdot \varepsilon\varphi(2\pi + \omega)}$$

$\varepsilon\varphi(\pi - \omega) = -\varepsilon\varphi\omega$
 $\sigma\varphi(3\pi + \omega) = \sigma\varphi(2\pi + \pi + \omega) = \sigma\varphi(\pi + \omega) = \sigma\varphi\omega$
 $\varepsilon\varphi(4\pi - \omega) = \varepsilon\varphi(-\omega) = -\varepsilon\varphi\omega$
 $\varepsilon\varphi\left(\frac{5\pi}{2} - \omega\right) = \varepsilon\varphi\left(2\pi + \frac{\pi}{2} - \omega\right) = \varepsilon\varphi\left(\frac{\pi}{2} - \omega\right) = \sigma\varphi\omega$
 $\varepsilon\varphi(5\pi + \omega) = \varepsilon\varphi(4\pi + \pi + \omega) = \varepsilon\varphi(\pi + \omega) = \sigma\varphi\omega$
 $\sigma\varphi(7\pi - \omega) = \sigma\varphi(6\pi + \pi - \omega) = \sigma\varphi(\pi - \omega) = -\sigma\varphi\omega$
 $\sigma\varphi(-\omega) = -\sigma\varphi\omega$
 $\varepsilon\varphi(2\pi + \omega) = \varepsilon\varphi\omega$

$$= \frac{-\varepsilon\varphi\omega \cdot \sigma\varphi\omega \cdot (-\varepsilon\varphi\omega) \cdot \sigma\varphi\omega}{\varepsilon\varphi\omega \cdot (-\sigma\varphi\omega) \cdot (-\sigma\varphi\omega) \cdot \varepsilon\varphi\omega} = \frac{\varepsilon\varphi^2\omega \cdot \sigma\varphi^2\omega}{\varepsilon\varphi^2\omega \cdot \sigma\varphi^2\omega} = 1$$

14.9 2)

$$\begin{aligned} \alpha' \text{ μέλος} &= \eta\mu(4\pi + x) + \eta\mu\left(\frac{5\pi}{2} - x\right) + \eta\mu(11\pi + x) + \eta\mu\left(\frac{7\pi}{2} - x\right) = \\ &= \eta\mu x + \eta\mu\left(\frac{4\pi}{2} + \frac{\pi}{2} - x\right) + \eta\mu(10\pi + \pi + x) + \eta\mu\left(\frac{6\pi}{2} + \frac{\pi}{2} - x\right) = \\ &= \eta\mu x + \eta\mu\left(\frac{\pi}{2} - x\right) + \eta\mu(\pi + x) + \eta\mu\left(3\pi + \frac{\pi}{2} - x\right) = \\ &= \eta\mu x + \sigma\upsilon\nu x - \eta\mu x + \eta\mu\left(3\pi + \pi + \frac{\pi}{2} - x\right) = \\ &= \eta\mu x + \sigma\upsilon\nu x - \eta\mu x + \eta\mu\left(\pi + \frac{\pi}{2} - x\right) = \\ &= \eta\mu x + \sigma\upsilon\nu x - \eta\mu x + \eta\mu\left(\frac{3\pi}{2} - x\right) = \\ &= \eta\mu x + \sigma\upsilon\nu x - \eta\mu x - \sigma\upsilon\nu x = 0 = \\ &= \beta' \text{ μέλος} \end{aligned}$$

14.9 3)

$$\begin{aligned} \alpha' \text{ μέλος} &= \frac{\eta\mu(-x) \cdot \varepsilon\varphi(5\pi + x) \sigma\upsilon\nu\left(\frac{\pi}{2} + x\right) \cdot \sigma\varphi(2\pi - x)}{\sigma\upsilon\nu(3\pi - x) \cdot \varepsilon\varphi\left(\frac{5\pi}{2} + x\right) \cdot \eta\mu\left(\frac{15\pi}{2} - x\right)} = \\ &= \frac{\eta\mu x \cdot \varepsilon\varphi(4\pi + \pi + x) \cdot (-\eta\mu x) \cdot (-\sigma\varphi x)}{\sigma\upsilon\nu(2\pi + \pi - x) \cdot \varepsilon\varphi\left(\frac{4\pi}{2} + \frac{\pi}{2} + x\right) \cdot \eta\mu\left(\frac{14\pi}{2} + \frac{\pi}{2} - x\right)} = \\ &= \frac{-\eta\mu x \cdot \varepsilon\varphi(\pi + x) \cdot \eta\mu x \cdot \sigma\varphi x}{\sigma\upsilon\nu(\pi - x) \cdot \varepsilon\varphi\left(\frac{\pi}{2} + x\right) \cdot \eta\mu\left(7\pi + \frac{\pi}{2} - x\right)} = \\ &= \frac{-\eta\mu x \cdot \varepsilon\varphi x \cdot \eta\mu x \cdot \cancel{\sigma\varphi x}}{-\sigma\upsilon\nu x \cdot \cancel{(-\sigma\varphi x)} \cdot \eta\mu\left(6\pi + \frac{3\pi}{2} - x\right)} = \end{aligned}$$

$$= \frac{\epsilon\varphi x \cdot \epsilon\varphi x \cdot \eta\mu x}{\sigma\upsilon\nu x} = \epsilon\varphi^3 x =$$

$$= \beta' \text{ μέλος}$$