16.11 1)

$$\varepsilon\varphi\left(2x+\frac{\pi}{4}\right)=\varepsilon\varphi\left(x-\frac{\pi}{3}\right)\Rightarrow 2x+\frac{\pi}{4}=\kappa\pi+x-\frac{\pi}{3}\Rightarrow 2x-x=\kappa\pi-\frac{\pi}{3}-\frac{\pi}{4}\Rightarrow x=\kappa\pi-\frac{7\pi}{12}\ ,\ \kappa\in Z$$

16.11 2)

$$\sigma\varphi\left(3x-\frac{2\pi}{3}\right)=\sigma\varphi\left(x+\frac{\pi}{3}\right)\Rightarrow 3x-\frac{2\pi}{3}=\kappa\pi+x+\frac{\pi}{3}\Rightarrow 3x-x=\kappa\pi+\frac{\pi}{3}+\frac{2\pi}{3}\Rightarrow 2x=\kappa\pi+\pi\Rightarrow$$

$$\Rightarrow x=\frac{\kappa\pi}{2}+\frac{\pi}{2}\Rightarrow x=\frac{\kappa\pi}{2}\ ,\ \kappa\in Z$$

16.11 3)

$$\eta\mu x=\eta\mu 2x\Rightarrow$$

$$\Rightarrow x=2\kappa\pi+2x$$
$$\Rightarrow x=-2\kappa\pi$$

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$$x=2\kappa\pi+\pi-2x$$
$$\Rightarrow 3x=2\kappa\pi+\pi$$
$$\Rightarrow x=\frac{2\kappa\pi}{3}+\frac{\pi}{3}\ ,\ \kappa\in Z$$

16.11 4)

$$\sigma\upsilon\nu\left(3x-\frac{\pi}{4}\right)=\sigma\upsilon\nu x\Rightarrow 3x-\frac{\pi}{4}=2\kappa\pi\pm x$$

$$\Rightarrow 3x-\frac{\pi}{4}=2\kappa\pi+x$$
$$\Rightarrow 2x=2\kappa\pi+\frac{\pi}{4}$$
$$\Rightarrow x=\kappa\pi+\frac{\pi}{8}$$

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$$3x-\frac{\pi}{4}=2\kappa\pi-x$$
$$\Rightarrow 4x=2\kappa\pi+\frac{\pi}{4}$$
$$\Rightarrow x=\frac{\kappa\pi}{2}+\frac{\pi}{16}$$

$\kappa\in Z$

16.11 5)

$$\varepsilon\varphi\left(x-\frac{\pi}{3}\right)=\varepsilon\varphi\left(\frac{\pi}{4}-x\right)\Rightarrow x-\frac{\pi}{3}=\kappa\pi+\frac{\pi}{4}-x\Rightarrow 2x=\kappa\pi+\frac{\pi}{4}+\frac{\pi}{3}\Rightarrow 2x=\kappa\pi+\frac{7\pi}{12}\Rightarrow$$

$$\Rightarrow x=\frac{\kappa\pi}{2}+\frac{7\pi}{24}\ ,\ \kappa\in Z$$

16.11 6)

$$\eta\mu\left(x+\frac{\pi}{3}\right)=\eta\mu\left(2x-\frac{\pi}{6}\right)\Rightarrow$$

$$\Rightarrow x+\frac{\pi}{3}=2\kappa\pi+2x-\frac{\pi}{6}$$
$$\Rightarrow x=-2\kappa\pi+\frac{\pi}{2}$$

$\kappa\in Z$

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$$x+\frac{\pi}{3}=2\kappa\pi+\pi-2x+\frac{\pi}{6}$$
$$\Rightarrow 3x=2\kappa\pi+\frac{5\pi}{6}$$
$$\Rightarrow x=\frac{2\kappa\pi}{3}+\frac{5\pi}{18}$$

$\kappa\in Z$

16.11 7)

$$\sigma\upsilon\nu\left(3x-\frac{5\pi}{6}\right)=\sigma\upsilon\nu\left(x+\frac{\pi}{6}\right)\Rightarrow 3x-\frac{5\pi}{6}=2\kappa\pi\pm\left(x+\frac{\pi}{6}\right)\Rightarrow$$

$$3x-\frac{5\pi}{6}=2\kappa\pi+x+\frac{\pi}{6}$$
$$\Rightarrow 2x=2\kappa\pi+\pi$$
$$\Rightarrow x=\kappa\pi+\frac{\pi}{2}\ ,\ \kappa\in Z$$
$$\kappa\in Z$$

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$$3x-\frac{5\pi}{6}=2\kappa\pi-x-\frac{\pi}{6}$$
$$\Rightarrow 4x=2\kappa\pi+\frac{2\pi}{3}$$
$$\Rightarrow x=\frac{\kappa\pi}{2}+\frac{\pi}{6}$$
$$\kappa\in Z$$