16.9 1)

α) $2\sigma\upsilon\nu^2x-1=0\Rightarrow 2\sigma\upsilon\nu^2x=1\Rightarrow \sigma\upsilon\nu^2x=\frac{1}{2}\Rightarrow \sigma\upsilon\nu x=\pm\sqrt{\frac{1}{2}}\Rightarrow \sigma\upsilon\nu x=\pm\frac{1}{\sqrt{2}}\Rightarrow \sigma\upsilon\nu x=\pm\frac{\sqrt{2}}{2}\Rightarrow$

$\Rightarrow \sigma\upsilon\nu x=\frac{\sqrt{2}}{2}\Rightarrow$

$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu\frac{\pi}{4}\Rightarrow$

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

ή $\sigma\upsilon\nu x=-\frac{\sqrt{2}}{2}\Rightarrow$

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

$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu\frac{3\pi}{4}\Rightarrow$

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

β) $\left(4\eta\mu^2x-3\right)\left(3\varepsilon\varphi^2x-1\right)=0\Rightarrow\left(2\eta\mu x-\sqrt{3}\right)\left(2\eta\mu x+\sqrt{3}\right)\left(\sqrt{3}\varepsilon\varphi x-1\right)\left(\sqrt{3}\varepsilon\varphi x+1\right)=0\Rightarrow$

$\Rightarrow 2\eta\mu x-\sqrt{3}=0\Rightarrow$

$\Rightarrow \eta\mu x=\frac{\sqrt{3}}{2}\Rightarrow$

$\Rightarrow \eta\mu x=\eta\mu\frac{\pi}{3}\Rightarrow$

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

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

ή $2\eta\mu x+\sqrt{3}=0\Rightarrow$

$\Rightarrow \eta\mu x=-\frac{\sqrt{3}}{2}\Rightarrow$

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

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

ή $x=2\kappa\pi+\frac{4\pi}{3},\kappa\in Z$

ή $\sqrt{3}\varepsilon\varphi x-1=0\Rightarrow$

$\Rightarrow \varepsilon\varphi x=\frac{1}{\sqrt{3}}\Rightarrow$

$\Rightarrow \varepsilon\varphi x=\frac{\sqrt{3}}{3}\Rightarrow$

$\Rightarrow \varepsilon\varphi x=\varepsilon\varphi\frac{\pi}{6}\Rightarrow$

$\Rightarrow x=\kappa\pi+\frac{\pi}{6},\kappa\in Z$

ή $\sqrt{3}\varepsilon\varphi x+1=0\Rightarrow$

$\Rightarrow \varepsilon\varphi x=-\frac{1}{\sqrt{3}}\Rightarrow$

$\Rightarrow \varepsilon\varphi x=-\frac{\sqrt{3}}{3}\Rightarrow$

$\Rightarrow \varepsilon\varphi x=\varepsilon\varphi\left(-\frac{\pi}{6}\right)\Rightarrow$

$\Rightarrow x=\kappa\pi-\frac{\pi}{6}$, $\kappa\in Z$

16.9 2)

$\sigma\upsilon\nu^2x-1=0\Rightarrow\sigma\upsilon\nu^2x=1\Rightarrow\sigma\upsilon\nu x=\pm1\Rightarrow$

$\sigma\upsilon\nu x=1$

$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu 0$

$\Rightarrow x=2\kappa\pi$

$\kappa\in Z$

ή

$\sigma\upsilon\nu x=-1$

$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu\pi$

$\Rightarrow x=2\kappa\pi\pm\pi$

$\kappa\in Z$

16.9 3)

$\varepsilon\varphi^2x-3=0\Rightarrow\varepsilon\varphi^2x=3\Rightarrow\varepsilon\varphi x=\pm\sqrt{3}\Rightarrow$

$\varepsilon\varphi x=\sqrt{3}$

$\Rightarrow \varepsilon\varphi x=\varepsilon\varphi\frac{\pi}{6}$

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

$\kappa\in Z$

ή

$\varepsilon\varphi x=-\sqrt{3}$

$\Rightarrow \varepsilon\varphi x=-\varepsilon\varphi\frac{\pi}{6}\Rightarrow \varepsilon\varphi x=\varepsilon\varphi\left(-\frac{\pi}{6}\right)$

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

$\kappa\in Z$

16.9 4)

$$2\eta\mu^2x-1=0\Rightarrow 2\eta\mu^2x=1\Rightarrow \eta\mu^2x=\frac{1}{2}\Rightarrow \eta\mu x=\pm\frac{\sqrt{2}}{2}\Rightarrow$$

$$\eta\mu x=\frac{\sqrt{2}}{2}$$
$$\Rightarrow \eta\mu x=\eta\mu\frac{\pi}{4}$$
$$\Rightarrow x=2\kappa\pi+\frac{\pi}{4} \quad \text{ή} \quad x=2\kappa\pi+\frac{3\pi}{4}$$
$$\kappa\in Z$$

ή

$$\eta\mu x=-\frac{\sqrt{2}}{2}$$
$$\Rightarrow \eta\mu x=-\eta\mu\frac{\pi}{4}\Rightarrow \eta\mu x=\eta\mu\left(-\frac{\pi}{4}\right)$$
$$\Rightarrow x=2\kappa\pi-\frac{\pi}{4} \quad \text{ή} \quad \eta\mu x=2\kappa\pi+\frac{5\pi}{4}$$
$$\kappa\in Z$$

16.9 5)

$$3\sigma\varphi^2x-1=0\Rightarrow 3\sigma\varphi^2x=1\Rightarrow \sigma\varphi^2x=\frac{1}{3}\Rightarrow \sigma\varphi x=\pm\frac{\sqrt{3}}{3}\Rightarrow$$

$$\sigma\varphi x=\frac{\sqrt{3}}{3}$$
$$\Rightarrow \sigma\varphi x=\sigma\varphi\frac{\pi}{3}$$
$$\Rightarrow x=\kappa\pi+\frac{\pi}{3}$$
$$\kappa\in Z$$

ή

$$\sigma\varphi x=-\frac{\sqrt{3}}{3}$$
$$\Rightarrow \sigma\varphi x=-\sigma\varphi\frac{\pi}{3}\Rightarrow \sigma\varphi x=\sigma\varphi\left(-\frac{\pi}{3}\right)$$
$$\Rightarrow x=\kappa\pi-\frac{\pi}{3}$$
$$\kappa\in Z$$

16.9 6)

$$\left(2\sigma\upsilon\nu^2x-1\right)\left(\sigma\varphi^2x-3\right)=0\Rightarrow\left(\sqrt{2}\sigma\upsilon\nu-1\right)\left(\sqrt{2}\sigma\upsilon\nu x+1\right)\left(\sigma\varphi x-\sqrt{3}\right)\left(\sigma\varphi x+\sqrt{3}\right)=0$$

$$\sqrt{2}\sigma\upsilon\nu x-1=0$$
$$\Rightarrow \sqrt{2}\sigma\upsilon\nu x=1$$
$$\Rightarrow \sigma\upsilon\nu x=\frac{\sqrt{2}}{2}$$
$$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu\frac{\pi}{4}$$
$$\Rightarrow x=2\kappa\pi\pm\frac{\pi}{4}$$
$$\kappa\in Z$$

ή

$$\sqrt{2}\sigma\upsilon\nu x+1=0$$
$$\Rightarrow \sqrt{2}\sigma\upsilon\nu x=-1$$
$$\Rightarrow \sigma\upsilon\nu x=-\frac{\sqrt{2}}{2}$$
$$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu\left(\pi-\frac{\pi}{4}\right)$$
$$\Rightarrow x=2\kappa\pi\pm\frac{3\pi}{4}$$
$$\kappa\in Z$$

ή

$$\sigma\varphi x-\sqrt{3}=0$$
$$\Rightarrow \sigma\varphi x=\sqrt{3}$$
$$\Rightarrow \sigma\varphi x=\sigma\varphi\frac{\pi}{6}$$
$$\Rightarrow x=\kappa\pi+\frac{\pi}{6}$$
$$\kappa\in Z$$

ή

$$\sigma\varphi x+\sqrt{3}=0$$
$$\Rightarrow \sigma\varphi x=-\sqrt{3}$$
$$\Rightarrow \sigma\varphi x=-\sigma\varphi\frac{\pi}{6}$$
$$\Rightarrow \sigma\varphi x=\sigma\varphi\left(-\frac{\pi}{6}\right)$$
$$\Rightarrow x=\kappa\pi-\frac{\pi}{6}$$
$$\kappa\in Z$$

16.9 7)

$$(\eta\mu^2 x-1)(2\sigma\upsilon\nu^2 x-1)=0 \Rightarrow (\eta\mu x-1)(\eta\mu x+1)(2\sigma\upsilon\nu x-1)(2\sigma\upsilon\nu x+1)=0$$

$\eta\mu x-1=0$
$\Rightarrow \eta\mu x=1$
$\Rightarrow \eta\mu x=\eta\mu\frac{\pi}{2}$
$\Rightarrow x=2\kappa\pi+\frac{\pi}{2}$
$\kappa\in Z$

ή

$\eta\mu x+1=0$
$\Rightarrow \eta\mu x=-1$
$\Rightarrow \eta\mu x=-\eta\mu\frac{\pi}{2}$
$\Rightarrow \eta\mu x=\eta\mu\left(-\frac{\pi}{2}\right)$
$\Rightarrow x=2\kappa\pi+\frac{\pi}{2}$
ή
$x=2\kappa\pi+\frac{3\pi}{2}$
$\kappa\in Z$

ή

$2\sigma\upsilon\nu x-1=0$
$\Rightarrow \sigma\upsilon\nu x=\frac{1}{2}$
$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu\frac{\pi}{3}$
$\Rightarrow x=2\kappa\pi\pm\frac{\pi}{3}$
$\kappa\in Z$

ή

$2\sigma\upsilon\nu x+1=0$
$\Rightarrow \sigma\upsilon\nu x=-\frac{1}{2}$
$\Rightarrow \sigma\upsilon\nu x=-\sigma\upsilon\nu\frac{\pi}{3}$
$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu\frac{2\pi}{3}$
$\Rightarrow x=2\kappa\pi\pm\frac{2\pi}{3}$
$\kappa\in Z$

16.9 8)

$$(4\sigma\upsilon\nu^2 x-3)(\varepsilon\varphi^2 x-1)=0 \Rightarrow (2\sigma\upsilon\nu x-\sqrt{3})(2\sigma\upsilon\nu x+\sqrt{3})(\varepsilon\varphi x-1)(\varepsilon\varphi x+1)=0$$

$2\sigma\upsilon\nu x-\sqrt{3}=0$
$\Rightarrow \sigma\upsilon\nu x=\frac{\sqrt{3}}{2}$
$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu\frac{\pi}{6}$
$\Rightarrow x=2\kappa\pi\pm\frac{\pi}{6}$
$\kappa\in Z$

ή

$2\sigma\upsilon\nu x+\sqrt{3}=0$
$\Rightarrow \sigma\upsilon\nu x=-\frac{\sqrt{3}}{2}$
$\Rightarrow \sigma\upsilon\nu x=-\sigma\upsilon\nu\frac{\pi}{6}$
$\Rightarrow \sigma\upsilon\nu x=\sigma\upsilon\nu\frac{5\pi}{6}$
$\Rightarrow x=2\kappa\pi\pm\frac{5\pi}{6}$
$\kappa\in Z$

ή

$\varepsilon\varphi x-1=0$
$\Rightarrow \varepsilon\varphi x=1$
$\Rightarrow \varepsilon\varphi x=\varepsilon\varphi\frac{\pi}{4}$
$\Rightarrow x=\kappa\pi+\frac{\pi}{4}$
$\kappa\in Z$

ή

$\varepsilon\varphi x+1=0$
$\Rightarrow \varepsilon\varphi x=-1$
$\Rightarrow \varepsilon\varphi x=-\varepsilon\varphi\frac{\pi}{4}$
$\Rightarrow \varepsilon\varphi x=\varepsilon\varphi\left(-\frac{\pi}{4}\right)$
$\Rightarrow x=\kappa\pi-\frac{\pi}{4}$

16.9 9)

$$(4\eta\mu^2 x-1)(\sigma\varphi^2 x-1)=0 \Rightarrow (2\eta\mu x-1)(2\eta\mu x+1)(\sigma\varphi x-1)(\sigma\varphi x+1)=0$$

$2\eta\mu x-1=0$
$\Rightarrow \eta\mu x=\frac{1}{2}$
$\Rightarrow \eta\mu x=\eta\mu\frac{\pi}{6}$
$\Rightarrow x=2\kappa\pi+\frac{\pi}{6}$
ή
$x=2\kappa\pi+\frac{5\pi}{6}$
$\kappa\in Z$

ή

$2\eta\mu x+1=0$
$\Rightarrow \eta\mu x=-\frac{1}{2}$
$\Rightarrow \eta\mu x=\eta\mu\left(-\frac{\pi}{6}\right)$
$\Rightarrow x=2\kappa\pi-\frac{\pi}{6}$
ή
$x=2\kappa\pi+\frac{7\pi}{6}$
$\kappa\in Z$

ή

$\sigma\varphi x-1=0$
$\Rightarrow \sigma\varphi x=1$
$\Rightarrow \sigma\varphi x=\sigma\varphi\frac{\pi}{4}$
$\Rightarrow x=\kappa\pi+\frac{\pi}{4}$
$\kappa\in Z$

ή

$\sigma\varphi x+1=0$
$\Rightarrow \sigma\varphi x=-1$
$\Rightarrow \sigma\varphi x=\sigma\varphi\left(-\frac{\pi}{4}\right)$
$\Rightarrow x=\kappa\pi-\frac{\pi}{4}$