11.1.12.

$$\left\{1,\ \cos\frac{n\pi x}{p},\ \sin\frac{m\pi x}{p}\right\},\ n=1,2,3,..,m=1,2,3..;\ [-p,p].$$

$$\left(1,\cos\frac{n\pi x}{p}\right)=\int_{-p}^{p}1\cos\frac{n\pi x}{p}\,dx=\left[\frac{p}{n\pi}\sin\frac{n\pi x}{p}\right]_{-p}^{p}=0$$

$$\left(1,\sin\frac{m\pi x}{p}\right)=\int_{-p}^{p}1\sin\frac{m\pi x}{p}\,dx=\left[\frac{-p}{m\pi}\cos\frac{m\pi x}{p}\right]_{-p}^{p}=0$$

$$(1,1)=\int_{-p}^{p}1\ 1\,dx=2p$$

$$n \neq m$$

$$(\cos \frac{n\pi x}{p}, \sin \frac{m\pi x}{p}) = \frac{1}{2}\int_{-p}^{p} \left\{ \sin \frac{(m-n)\pi x}{p} + \sin \frac{(m+n)\pi x}{p} \right\} dx = 0$$

$$n = m$$

$$(\cos \frac{n\pi x}{p}, \sin \frac{n\pi x}{p}) = \frac{1}{2}\int_{-p}^{p} \left\{ \sin \frac{2n\pi x}{p} \right\} dx = 0$$

$$n \neq m$$

$$(\cos \frac{n\pi x}{p}, \cos \frac{m\pi x}{p}) = \frac{1}{2}\int_{-p}^{p} \left\{ \cos \frac{(m-n)\pi x}{p} + \cos \frac{(m+n)\pi x}{p} \right\} dx = 0$$

$$n = m$$

$$(\cos\frac{n\pi x}{p},\cos\frac{n\pi x}{p}) = \frac{1}{2}\int_{-p}^{p}\left\{1+\cos\frac{2n\pi x}{p}\right\}dx = p$$

$$n \neq m$$

$$(\sin\frac{n\pi x}{p},\sin\frac{m\pi x}{p}) = \frac{1}{2}\int_{-p}^{p}\left\{\cos\frac{(m-n)\pi x}{p}-\cos\frac{(m+n)\pi x}{p}\right\}dx = 0$$

$$n = m$$

$$(\sin\frac{n\pi x}{p},\sin\frac{n\pi x}{p}) = \frac{1}{2}\int_{-p}^{p}\left\{1-\cos\frac{2n\pi x}{p}\right\}dx = p$$

$$\text{Normerna}: \left|\cos\frac{n\pi x}{p}\right| = \left|\sin\frac{n\pi x}{p}\right| = \sqrt{p}, \ \|1\| = \sqrt{2p}.$$