11.1.9.

$$\{\sin nx\},\quad n=1,2,3,\ldots.[0,\pi]$$

$$(\sin nx,\sin mx) = \int_0^{\pi} \sin nx \sin mx\,dx =$$

$$=\frac{1}{2}\int_0^{\pi}(\cos(n-m)x-\cos(n+m)x)dx =$$

$$n\neq m$$

$$=\frac{1}{2}\left[\frac{\sin(n-m)x}{n-m}-\frac{\sin(n+m)x}{n+m}\right]_0^{\pi}=0$$

$$n = m$$

$$(\sin nx, \sin nx) = \int_0^{\pi} \sin nx \sin nx dx =$$

$$= \frac{1}{2}\int_0^{\pi}(1 - \cos 2nx)\,dx = \frac{1}{2}\pi = \|\sin nx\|^2$$

Normen är $\sqrt{\frac{\pi}{2}}$.