

**PROOF OF FORMULA 3.631.4**

$$\int_0^\pi \sin^n x \sin 2mx \, dx = 0$$

Observe that

$$\int_0^\pi \sin^n x \sin 2mx \, dx = \int_0^{\pi/2} \sin^n x \sin 2mx \, dx + \int_{\pi/2}^\pi \sin^n x \sin 2mx \, dx.$$

The result follows by letting  $t = \pi - x$  in the second integral.