

$$\cos(3x) \cdot \sin x$$

$$\left(\frac{e^{3ix} + e^{-3ix}}{2} \right) \times \left(\frac{e^{ix} - e^{-ix}}{2i} \right)$$

$$\left(\frac{e^{6ix} + \cancel{2(e^{3ix} \cdot e^{-3ix})} + e^{-6ix}}{4} \right) \times \left(\frac{e^{ix} - e^{-ix}}{2i} \right)$$

$$\left(\frac{e^{7ix} - e^{5ix} + \cancel{2(e^{4ix} \cdot e^{2ix})} + e^{-5ix}}{4} \right) \times \left(\frac{e^{ix} - e^{-ix}}{2i} \right)$$

$$\left(\frac{e^{6ix} + e^{-6ix}}{4} \right) \times \left(\frac{e^{ix} - e^{-ix}}{2i} \right)$$

$$\frac{1}{8i} \left(\frac{e^{7ix} - e^{-5ix}}{2} + \frac{e^{5ix} - e^{-7ix}}{2} \right)$$

$$\frac{1}{4} \sin 7x + \frac{1}{4} \sin 5x$$

$$\frac{1}{4} (\sin 7x + \sin 5x)$$

$$[\sin u] = \frac{1}{7} \cos 7x + \frac{1}{5} \cos 5x$$

$$\int_0^{\pi} \frac{1}{4} \left(-\frac{1}{7} \cos 7x - \frac{1}{5} \cos 5x \right)$$

$$\frac{1}{4} \left(\frac{1}{7} + \frac{1}{5} \right) + \left[\frac{1}{7} + \frac{1}{5} \right]$$

~~$\int \cos(3x) \sin x$~~

