

$$4 \int_C \sin x dy \quad C: (x, y) = (t, t^2), t \in [0, \pi]$$

$$y = t^2 \quad \frac{dy}{dt} = 2t \quad dy = 2t dt$$

$$\begin{aligned} \text{5.2} \quad (\oint_C) &= \int_0^\pi \sin t \cdot 2t dt \\ &= 2 \int_0^\pi t \sin t dt \end{aligned}$$

$$= 2 \left\{ [-t \cos t]_0^\pi + \int_0^\pi \cos t dt \right\}$$

$$= 2 \left\{ (\pi - 0) + [\sin t]_0^\pi \right\}$$

$$= \underline{2\pi}$$

$$\underline{\text{5.2 } (\oint_C) = 2\pi}$$