

Compute the following integrals using integration by parts.

(a)  $\int_0^\pi e^{-x} \cos x dx$  with  $u = \cos x$  and  $dv = e^{-x} dx$ .

(b)  $\int x^2 e^x dx$  with  $u = x^2$  and  $dv = e^x dx$ .

Evaluate the area of the surface obtain by revolving the curve  $y = \sqrt{x}$  ( $0 \leq x \leq 4$ ) about the  $x$ -axis.