

(1) [7 points] Use Simpson's rule with  $n = 4$  to approximate  $\int_0^{2\pi} x \sin(x) dx$ . Simplify your final answer.

(2) [8 points] Evaluate the improper integral  $\int_{-\infty}^0 x e^{-x^2} dx$ . Clearly and neatly show all details, including any required substitutions or limits.