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

(2) [8 points] Evaluate the improper integral $\int_{-\infty}^{0} x^2 e^{x^3}\, dx$. Clearly and neatly show all details, including any required substitutions or limits.