1. (2 points) At time \( t \) hours, a population of bacteria is growing at a rate of \( 16t + 4 \) bacteria per hour. If the population is 5000 at time \( t = 1 \), then what is the population at time \( t = 2 \) hours?
2. (2 points each) Evaluate the definite integrals. Simplify your answers.

(a) \( \int_{-1}^{\sqrt[3]{7}} \frac{21t^2}{\sqrt{t^3 + 2}} \, dt \)

(b) \( \int_{5/4}^{9/4} (4x - 7)^{11} \cos (4x - 7) \, dx \)
3. (2 points each) Evaluate the indefinite integrals.

(a) \[ \int \cos^3 (x) \sin^6 (x) \, dx \]

(b) \[ \int 14x^{13} (x^7 + 2)^{60} \, dx \]