1. Find the following indefinite integrals:

(a) \( \int (1 + \sin t)^9 \cos t \, dt \) 
(b) \( \int \frac{1}{2x - 5} \, dx \)
(c) \( \int x^2 \sqrt{5x^3 - 1} \, dx \) 
(d) \( \int \frac{e^x}{(1 - e^x)^2} \, dx \)
(e) \( \int \frac{\sec^2(\ln x)}{x} \, dx \) 
(f) \( \int \cot x \, dx \)
(g) \( \int \frac{e^x}{5 + e^{2x}} \, dx \) 
(h) \( \int \frac{\tan^{-1} x}{1 + x^2} \, dx \)
(i) \( \int \frac{dx}{\sqrt{9 - 4x^2}} \) 
(j) \( \int \frac{\cos \sqrt{x}}{\sqrt{x}} \, dx \)

2. Find the following definite integrals:

(a) \( \int_{\pi/3}^{\pi} \frac{\sin x}{\cos^4 x} \, dx \) 
(b) \( \int_{0}^{\pi/4} e^{\tan x} \sec^2 x \, dx \) 
(c) \( \int_{0}^{\pi/4} \frac{x}{\sqrt{1 - x^4}} \, dx \)

3. Do problem #67 on page 382.

4. A particle moves along a straight line with acceleration

\[ a(t) = t \sin(t^2 + \pi) \, \text{cm/sec}^2. \]

The particle’s initial velocity is 5 cm/sec. Find the velocity of the particle at time \( t \).

5. Is the following statement true or false?

If \( f(x) \) is continuous, then \( \int f'(x) \cos \left( f(x) \right) \, dx = \sin \left( f(x) \right) + C. \)

If it is true, briefly explain why. If it is false, explain why it’s false or else give an example (a graph or a formula) that shows that it’s false.