

name : _____

section : 109

GSI : Charles Wang

(2 pts) Circle True or False. (+1 for correct, 0 for blank, -1 for incorrect)

1. (True False) The Fundamental Theorem of Calculus is useful because it links Riemann sums with antiderivatives.
2. (True False) u -substitution for integrals is analogous to the product rule for differentiation.

(10 pts) For the following, you must **justify** your answer to receive credit. (Showing your work counts as justification.)

3. (a) Compute $\int \sin(x)^2 \cos(x) dx$.

- (b) You throw a ball straight upwards from height 0 with an initial velocity of 10. The ball has a constant acceleration $a(t) = -10$. Find a formula for the height of the ball at time t .