

name : _____

section : 105

GSI : Charles Wang

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

1. (True False) $\lim_{n \rightarrow \infty} (1 + \frac{1}{2n})^n = e^2$

2. (True False) Differentiable functions are always continuous.

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

3. (a) Use the limit definition of the derivative to compute $f'(5)$ for $f(x) = \sqrt{x + x^2}$.

(b) Compute the derivative of $f(x) = \sin(\cos(\sqrt{x}))$.