

Lab Time:

Your Name:

GOAL: This quiz is designed to illuminate your understanding of derivatives, differentiation and continuity. TRUE or FALSE – put your answer in the box (1 point). To receive FULL credit, you must also give a brief, and correct, explanation in support of your answer! Remember if you think a statement is TRUE you must prove it is ALWAYS true. If you think a statement is FALSE then all you have to do is show there exists a counterexample which proves the statement is FALSE at least once.

(a) 5 points. **TRUE or FALSE?** “There is exactly one function whose derivative equals $x^2 + 3$.”

(b) 5 points. **TRUE or FALSE?** “There is exactly one function which equals the derivative of $x^2 + 3$.”

(c) 5 points. **TRUE or FALSE?** “If $f(x)$ is continuous at $x = a$, then $f(a)$ exists.”

(d) 5 points. **TRUE or FALSE?** “If $f(a)$ DOES NOT exist, then $f(x)$ is NOT differentiable at $x = a$.”