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 Taylor series at $x = 3$ for the function $f(x) = x^2 + 1$ is $T(x) = x^2 + 1$.

2. (True False) Newton's method always outputs exact values for the roots of a function.

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

3. (a) Compute the Taylor series for e^{x^2} at $x = 0$.

(b) Perform one iteration of Newton's method to approximate $\sqrt{99}$ with a starting guess of $x_0 = 10$.