name : _____

section : 105

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 $x = 9$ for the function $f(x) = x + 1$ is $T(x) = x + 1$.

2. (True False) Newton's method may not converge for some functions and starting points.

(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 $f(x) = \frac{1}{1-x^2}$ at $x = 0$.

(b) Perform one iteration of Newton's method to approximate $\sqrt{101}$ with a starting guess of $x_0 = 10$.