name : _____

section : 109

GSI : Charles Wang

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

1. (True False) If a function f has a removable discontinuity at p, then $\lim_{x\to p} f(x)$ exists.
2. (True False) $\lim_{n\to\infty}(1+\frac{1}{2n})^{2n} = e^2$

(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 $f'(3)$ for $f(x) = \frac{1}{x^2+1}$.

(b) Compute the derivative of $f(x) = \ln(\tan(\frac{1}{x}))$.