

MATH 444 section E13, QUIZ #4

Name .....

1. (10 pts) Use the definition to prove that the derivative of  $f(x) = x^4$  at  $x = c$  is  $4c^3$ .  
(hint: we can factor  $x^4 - c^4$  as  $(x^2 - c^2)(x^2 + c^2)$  and then factor  $x^2 - c^2$ ).

2. (10 pts) Prove that  $f(x) = \frac{1}{x}$  is uniformly continuous on  $[1, \infty)$  but not uniformly continuous on  $(0, \infty)$ .