

# MA 425-003 Homework

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Assigned March 3, 2003, due March 17, 2003

1. Let  $c > 0$ . This problem provides a proof that  $\lim_{x \rightarrow c} x^2 = c^2$  that is different from the one given in lecture.
  - (a) Let  $a > c > 0$ . Show that if  $x \in (0, a)$  then  $|x^2 - c^2| \leq 2a|x - c|$ .
  - (b) Use part (a) to prove that if  $c > 0$  then  $\lim_{x \rightarrow c} x^2 = c^2$ .
2. Sec. 4.1 problem 8. See book's hint. In this problem it helps to multiply  $|\sqrt{x} - \sqrt{c}|$  by  $\frac{\sqrt{x} + \sqrt{c}}{\sqrt{x} + \sqrt{c}}$ .
3. Sec. 4.1 problem 14. For part (b) you will find Theorem 2.4.8 and Corollary 2.4.9 helpful.
4. Sec. 4.2 problem 5.
5. Sec. 4.2 problem 11d. Prove that the limit is 0 using the Squeeze Theorem.