REAL ANALYSIS
MATH 205/H140, HW#8

Chapter 8, exercises 5, 12, 23, 31, 33, 40, 41, 62, 64, and the following problem:

Problem 1.

Which of the following functions are uniformly continuous? Explain your answer.

a) $f : \mathbb{R}^1 \to \mathbb{R}^1$, $f(x) = x^2$

b) $f : \mathbb{R}^1 \to \mathbb{R}^1$, $f(x) = \sin(x^2)$

c) $f : \mathbb{R}^1 \to \mathbb{R}^1$, $f(x) = \sqrt{|x|}$

d) $f : \mathbb{R}^1 \to \mathbb{R}^1$, $f(x) = \sin(\sqrt{|x|})$

e) $f : \mathbb{R}^1 \to \mathbb{R}^1$, $f(x) = \begin{cases} x \sin \frac{1}{x^2}, & \text{if } x \neq 0; \\ 0, & \text{if } x = 0. \end{cases}$