Advanced Calculus II | HW #1 | Due 01/28/05

Spring 2005 | Dr. D. P. Story

Assignments should be neatly-written, well-organized and concise. If you miss a class and need to get an assignment, see

`http://www.math.uakron.edu/~dpstory/`

All class assignments and other announcements will be posted on this web site.

§4.3, page 155, in the text

1. Problem 15. Use the definition to prove $f(x) = x^2$ is convex on $\mathbb{R}$.

2. Problem 18. Prove the sum of two convex functions is convex.

3. Problem 20. Give an example of a function that is convex and unbounded on $(0, 1)$.

4. Problem 21. Define

$$f(x) = \begin{cases} 2, & x = -1; \\ x^2, & -1 < x < 2; \\ 5, & x = 2 \end{cases}$$

Show f is convex on $[\,-1, 2\,]$ but not continuous on $[\,-1, 2\,]$.

5. Problem 23. Suppose f is convex on $\mathbb{R}$, prove f is continuous on $\mathbb{R}$.