Homework 1, due Tuesday, 23 September

Library of Functions

1. $f(x) = \sqrt{x}$

   (a) Determine algebraically whether $f(x)$ is even, odd, or neither. What kind of symmetry does $f(x)$ have?

   (b) Determine the intercepts, if any of the graph of $f(x)$.

   (c) Graph $f(x)$.

   (d) What is the domain and range of the function?

   (e) Where is the function increasing or decreasing? Does the function have any local maxima or minima?

2. $f(x) = \sqrt[3]{x}$

   (a) Determine algebraically whether $f(x)$ is even, odd, or neither. What kind of symmetry does $f(x)$ have?

   (b) Determine the intercepts, if any of the graph of $f(x)$.

   (c) Graph $f(x)$.

   (d) What is the domain and range of the function?

   (e) Where is the function increasing or decreasing? Does the function have any local maxima or minima?

3. $f(x) = |x|$

   (a) Determine algebraically whether $f(x)$ is even, odd, or neither. What kind of symmetry does $f(x)$ have?

   (b) Determine the intercepts, if any of the graph of $f(x)$.

   (c) Graph $f(x)$.

   (d) What is the domain and range of the function?

   (e) Where is the function increasing or decreasing? Does the function have any local maxima or minima?

4. $f(x) = 1/x$

   (a) Determine algebraically whether $f(x)$ is even, odd, or neither. What kind of symmetry does $f(x)$ have?

   (b) Determine the intercepts, if any of the graph of $f(x)$.

   (c) Graph $f(x)$.

   (d) What is the domain and range of the function?

   (e) Where is the function increasing or decreasing? Does the function have any local maxima or minima?

5. $f(x) = x^2$

   (a) Determine algebraically whether $f(x)$ is even, odd, or neither. What kind of symmetry does $f(x)$ have?

   (b) Determine the intercepts, if any of the graph of $f(x)$.

   (c) Graph $f(x)$.

   (d) What is the domain and range of the function?

   (e) Where is the function increasing or decreasing? Does the function have any local maxima or minima?

6. $f(x) = x^3$

   (a) Determine algebraically whether $f(x)$ is even, odd, or neither. What kind of symmetry does $f(x)$ have?

   (b) Determine the intercepts, if any of the graph of $f(x)$.

   (c) Graph $f(x)$.

   (d) What is the domain and range of the function?

   (e) Where is the function increasing or decreasing? Does the function have any local maxima or minima?

Other problems:

- Section 3.1 #40, 93
- Section 3.2 #11, 14, 24, 41
- Section 3.3 #21, 22, 23, 25, 60, 63
- Section 3.4 #32, 36, 47
- Section 3.5 #19, 21, 23, 25, 42, 89