

Math 131 Spring, 2008 Homework 8 Due Feb. 8 Name: _____

Mathematics Quote: *It is here [in mathematics] that the artist has the fullest scope of his imagination.*
– Havelock Ellis, The Dance of Life.

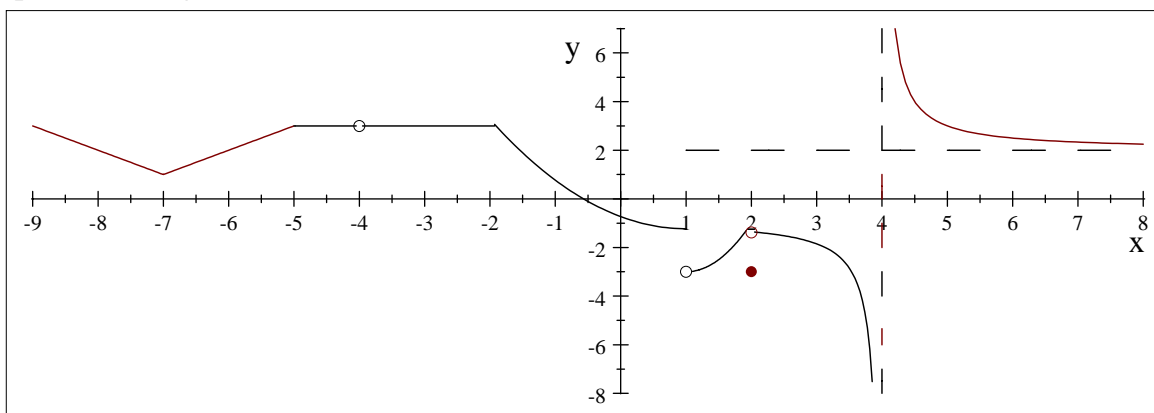
1. Reading: Page 159-166

- (1) Definitions 2.1. Understand graphically the conditions given in the definition through the examples in Figure and 2.19c and 1.19d. and algebraically through examples 2.1, 2.2, 2.3, and 2.4.
- (2) Theorem 2.1 and learn how to use the result given the theorem through examples in Figure 2.19a and Figure 2.19b.

2. State the **definition of derivative of a function f at $x = a$.**

3. Describe mathematically all possible conditions when a function $f(x)$ is NOT differentiable at $x = a$ (from Definition 2.1 and Theorem 2.1).

4. The graph of $f(x)$ is given below.



- (1) Find all values of x at which $f(x)$ is not **differentiable**.
- (2) For each x obtained in (1), give a condition stated in 3. above.

5. Page 166: Turn in the problem with *.
*2, *3 - using the formula in (2.1) (not (2.2))
*6, *7, *9 - using the formula in (2.3).
Extra points: Page 166-167: 4, 8, 12