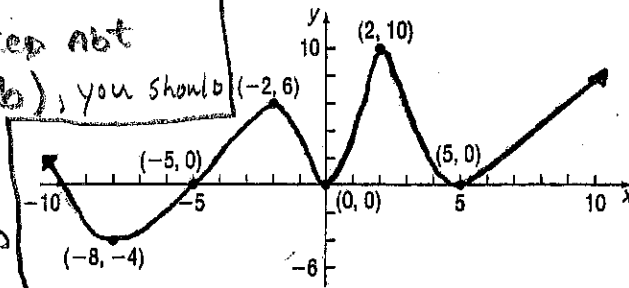


# Key

## Precalculus Section 2:3 Properties of Functions

1. Use the given graph of the function  $f$  to answer the questions below:

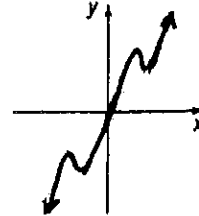
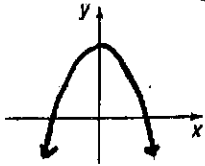
\* If you are asked abt an interval  $(a, b)$ , you should consider what is happening on the graph from  $x=a$  to  $x=b$ .



- A Is  $f$  increasing on the interval  $(-8, -2)$ ? **Yes**
- B Is  $f$  increasing on the interval  $(2, 10)$ ? **No, only from  $(5, 10)$**
- C List the interval(s) on which  $f$  is increasing.  
 **$(-8, -2), (0, 2), (5, \infty)$**
- D Is there a local maximum at 2? If yes, what is it? **Yes, 10.**
- E List the numbers at which  $f$  has a local maximum. What are these local maxima? **local max @  $x = -2, -2$**   
The values of the local max are:  
 **$6 + 10$**

- F Is  $f$  decreasing on the interval  $(-8, -4)$ ? **NO**
- G Is  $f$  decreasing on the interval  $(2, 5)$ ? **Yes**
- H List the interval(s) on which  $f$  is decreasing.  
 **$(-\infty, -8), (-2, 0), (2, 5)$**
- I Is there a local maximum at 5? If yes, what is it? **NO**
- J List the numbers at which  $f$  has a local minimum. What are these local minima?  
**local min @  $x = -8, 0, 5$**   
The local min values are:  **$-4, 0, 0$**

2. Determine whether each graph is the graph of an odd function, even function, or neither.



- (a) even                      (b) neither                      (c) odd

3. Determine whether each of the following  $g$  functions is even, odd, or neither. Then determine if the graph is symmetric with respect to the  $y$ -axis or with respect to the origin.

- (a)  $f(x) = x^2 - 5$  even                       $y$ -axis
- (b)  $g(x) = x^3 - 1$  neither                      \_\_\_\_\_
- (c)  $h(x) = 5x^3 - x$  odd                      origin
- (d)  $F(x) = |x|$  even                       $y$ -axis