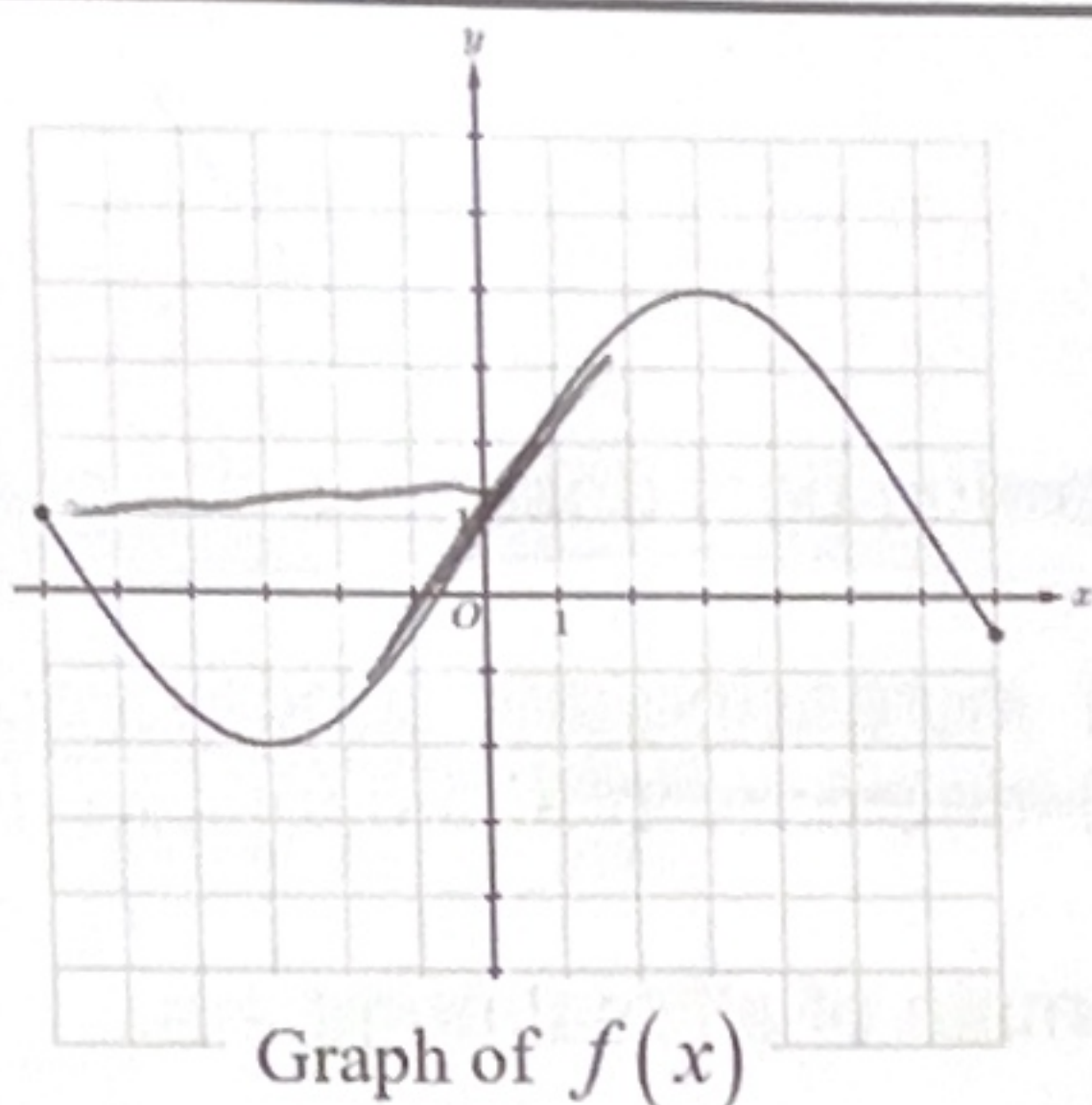


Name: Enmanuel Rumbay

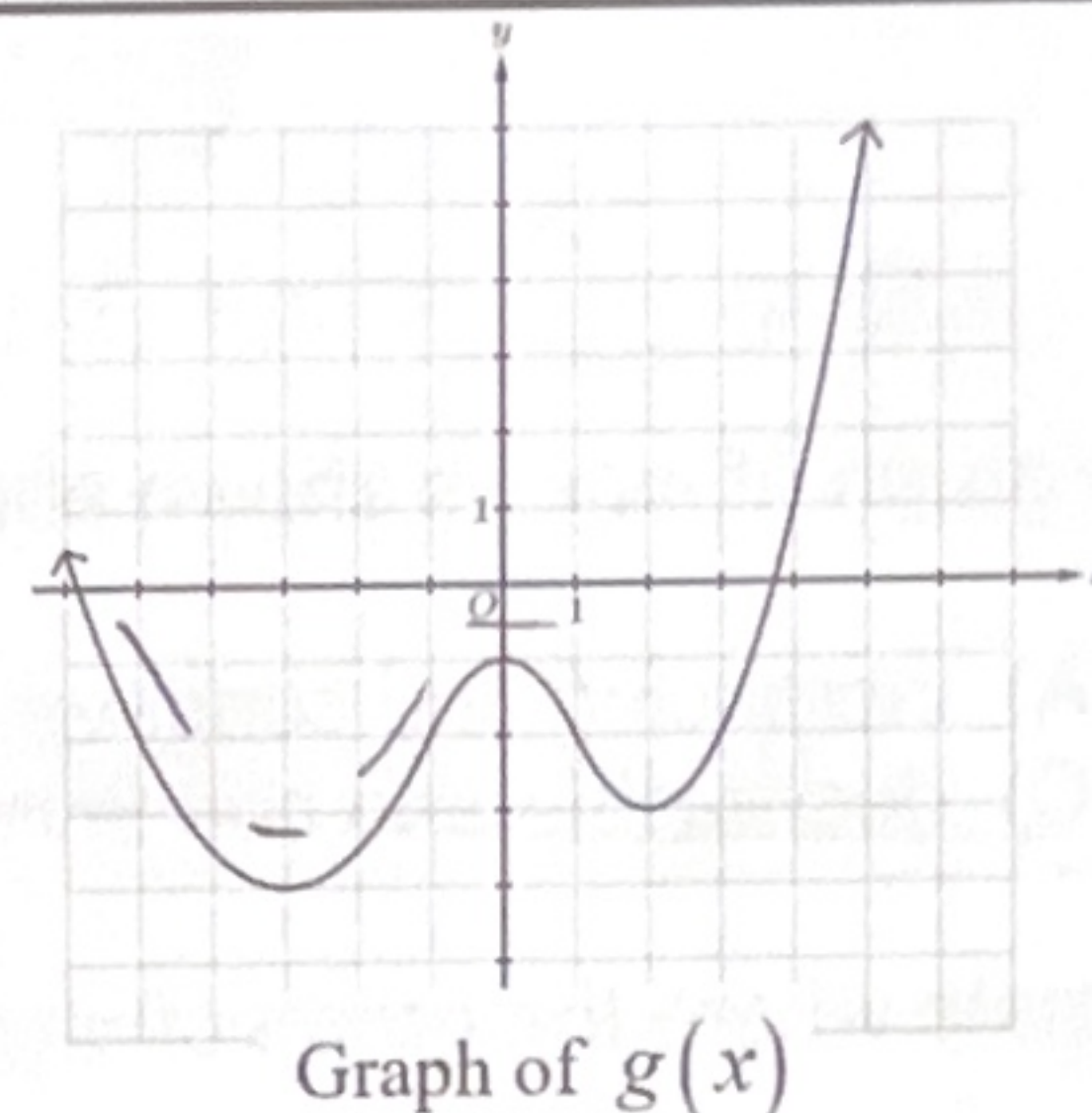
Hour: _____ Date: _____

Directions: For each of the following, find the intervals where the given has the following characteristics.

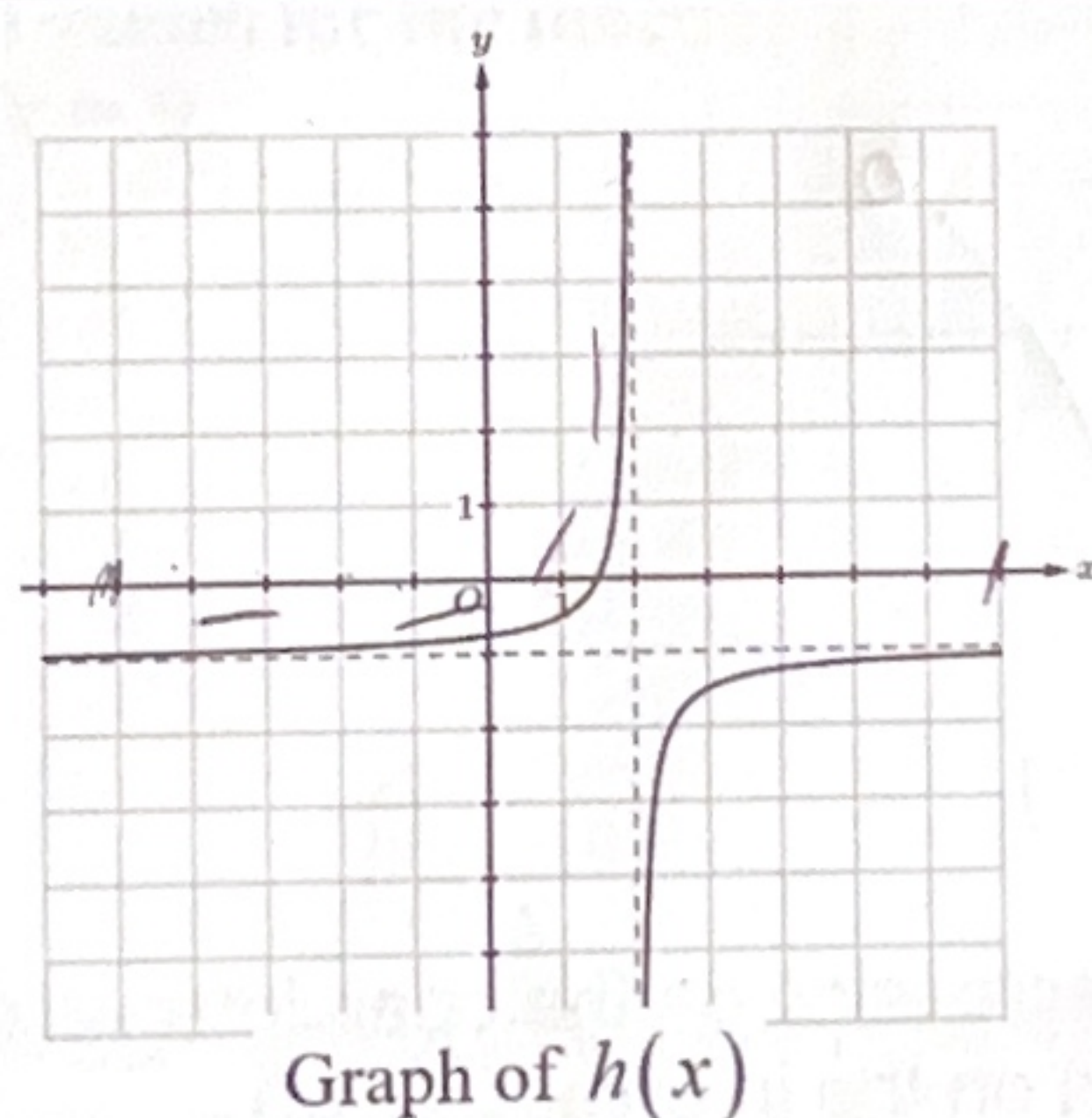
1.

1a. On what open intervals is $f(x)$ increasing? $(-1, 2)$ 1b. On what open intervals is $f(x)$ concave down? $(-3, 3)$

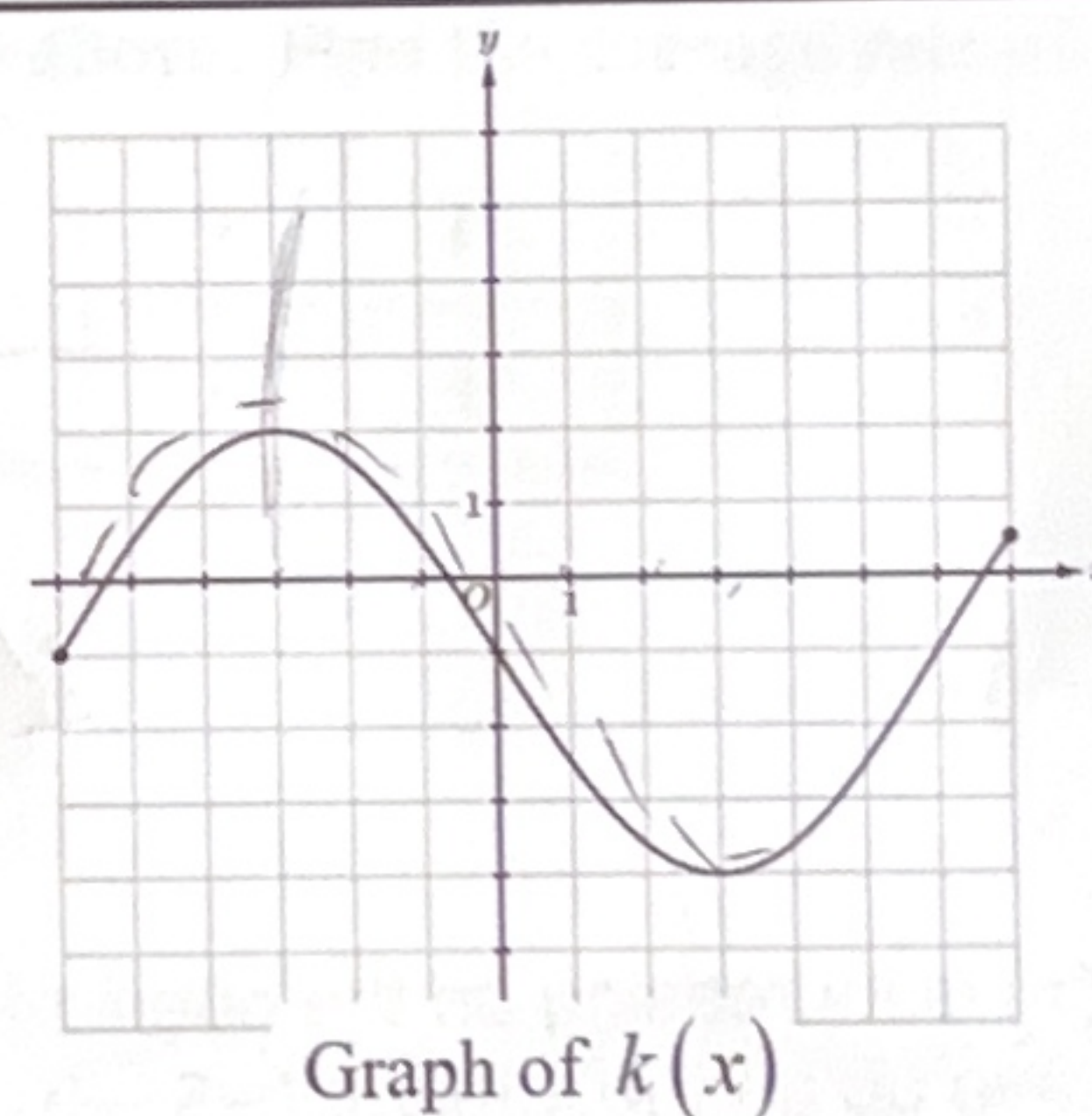
2.

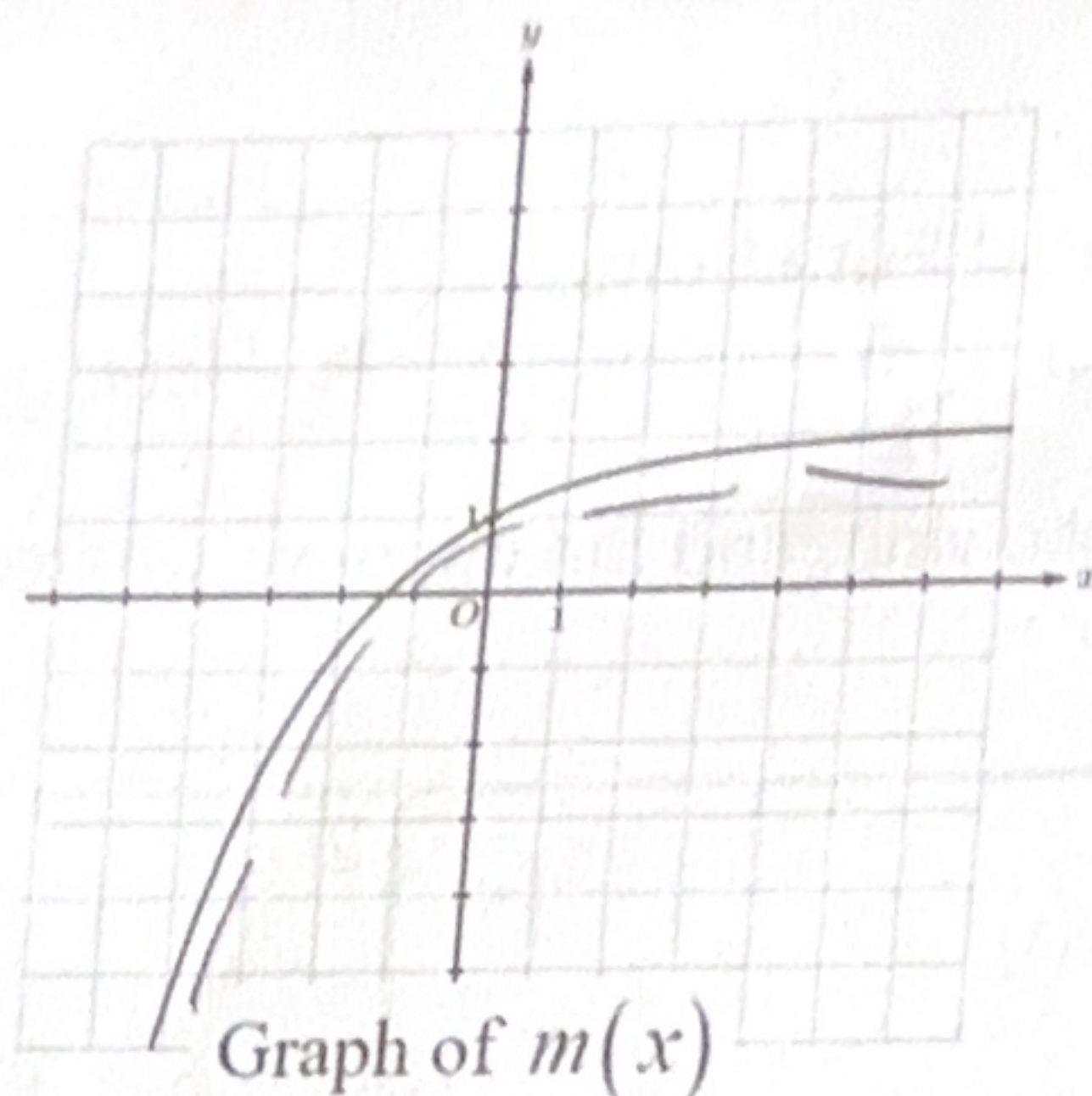
2a. On what open intervals is $g(x)$ decreasing? $(-\infty, -1) \cup (0, 2)$ 2b. On what open intervals is $g(x)$ concave up? $(-\infty, -1)$

3.

3a. For $-5 \leq x \leq 7$, on what open intervals is $h(x)$ increasing? $(-5, 2) \cup (2, 7)$ 3b. For $-5 \leq x \leq 7$, on what open intervals is $h(x)$ concave up? $(-5, 2)$

4.

4a. On what open intervals is $k(x)$ both increasing and concave down? $(-1, 1)$ 4b. On what open intervals is $k(x)$ both decreasing and concave up? $(1, 2) \cup (-1, 0)$



5. The graph of $m(x)$ is shown above. Which of the following best describes the graph of $m(x)$?

- A) increasing and concave up
C) ~~decreasing and concave up~~

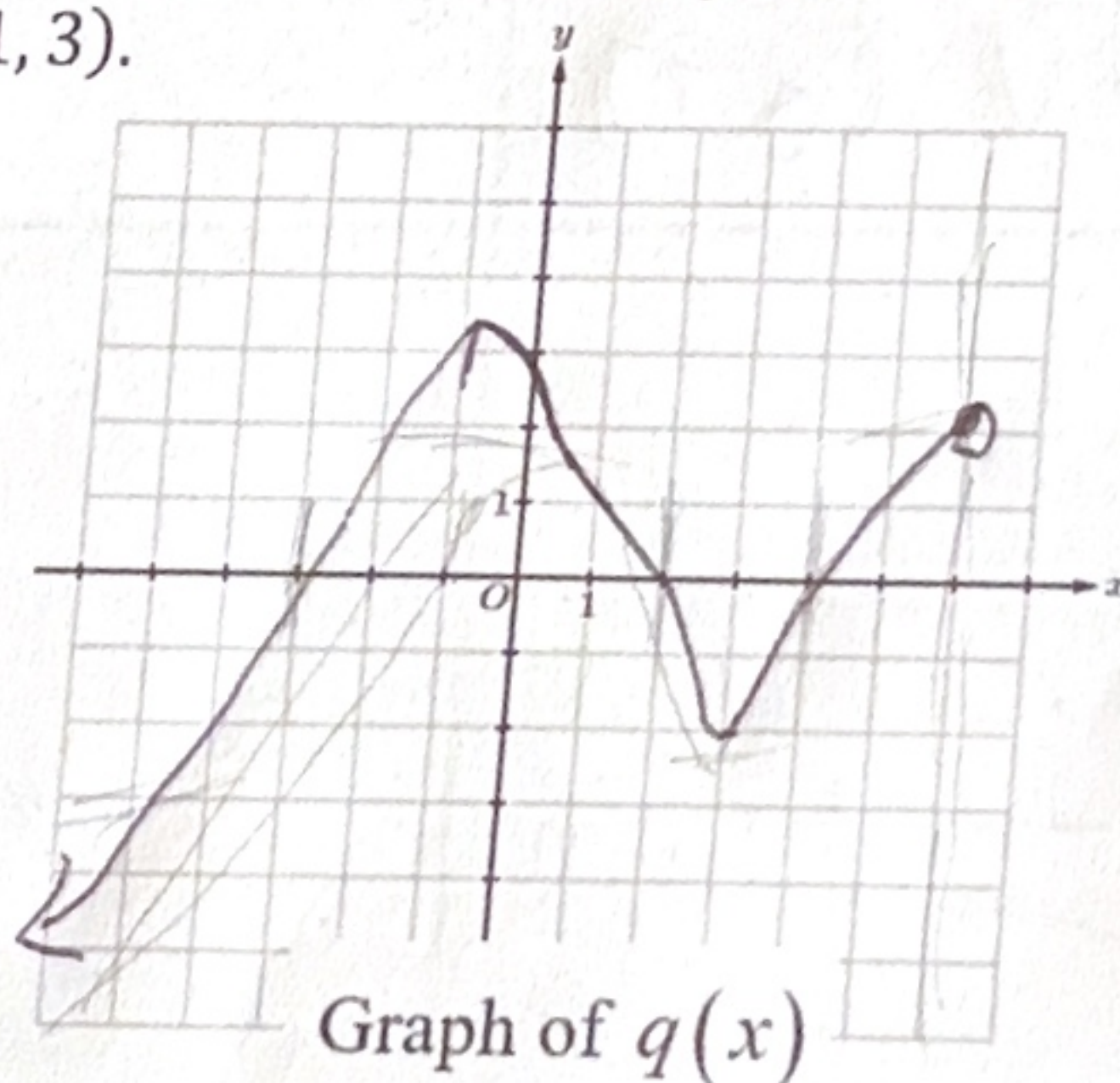
- B) increasing and concave down
D) ~~decreasing and concave down~~

6. Estimate where the graph of $m(x)$ is positive, given a domain of all real numbers.

$$\approx (-1.25, \infty)$$

Directions: For problems 7 and 8, sketch a function on the axes provided with the given properties.

7. $q(x)$ has a domain of $(-\infty, 6)$ and is positive on the interval $(-3, 2)$ and $(4, 6)$ and negative on the intervals $(-\infty, -3)$ and $(2, 4)$. $q(x)$ is increasing on the intervals $(-\infty, -1)$ and $(3, 6)$ and decreasing on the interval $(-1, 3)$.



8. $p(x)$ is increasing on the open interval $(-5, 1)$ and decreasing on the open interval $(1, \infty)$. $p(x)$ is concave up on the interval $(-5, -2)$ and concave down on the interval $(-2, \infty)$.

