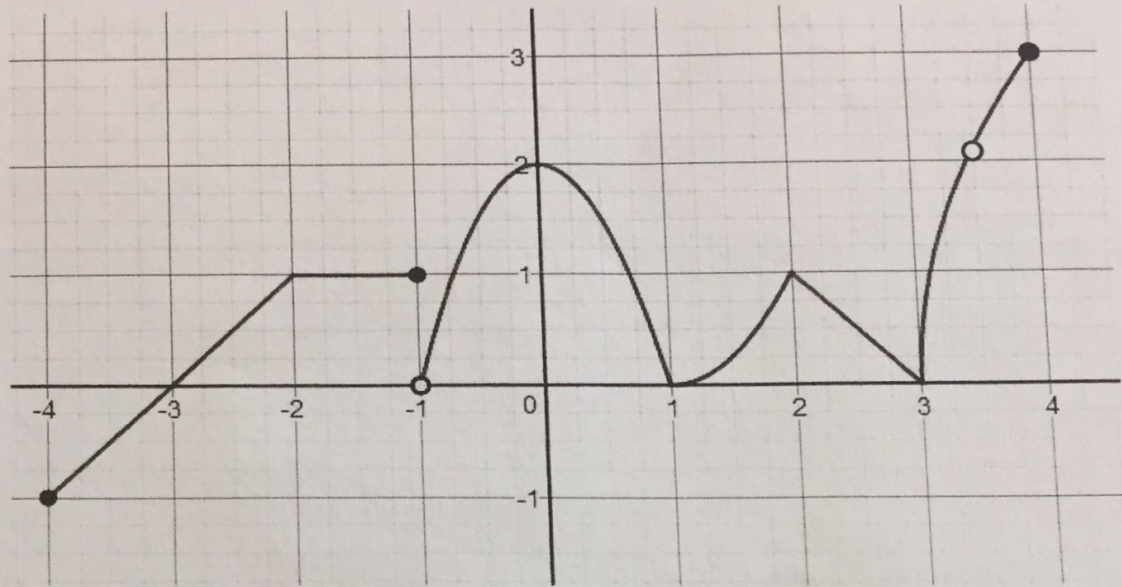


Characteristics of Functions



Using the graph of the above function, $f(x)$ answer the following questions.

1) Evaluate.

- | | | | | |
|------------------|-----------------|-----------------|-----------------|----------------------|
| a) $f(-4)$
-1 | b) $f(-3)$
0 | c) $f(-2)$
1 | d) $f(-1)$
1 | e) $f(0)$
2 |
| f) $f(1)$
0 | g) $f(2)$
1 | h) $f(3)$
0 | i) $f(4)$
3 | j) $f(3.5)$
undef |

2) For what interval(s) is the function positive?

$(3, 1) \cup (1, 3) \cup (3, 3.5) \cup (3.5, 4)$

3) For what value(s) of x is $f(x) = 0$?

$x = -3$
 $x = 1$ $x = 3$

4) For what interval(s) is the function negative?

$[-4, -3)$

5) What are the x-intercepts of the function?

$(-3, 0)$ $(3, 0)$
 $(1, 0)$

6) What is the y-intercept of the function?

$(0, 2)$

7) For what interval(s) is the function increasing?

$(-4, -2) \cup (-1, 0) \cup (1, 2) \cup (3, 3.5) \cup (3.5, 4)$

8) For what interval is the function decreasing?

$(0, 1) \cup (2, 3)$

9) For what interval(s) is the function constant?

$(-2, -1)$

10) What are the local extrema?

Max 2 @ $x = 0$ 1 @ $x = 2$
Min 0 @ $x = 1$ 0 @ $x = 3$

11) What are the absolute extrema?

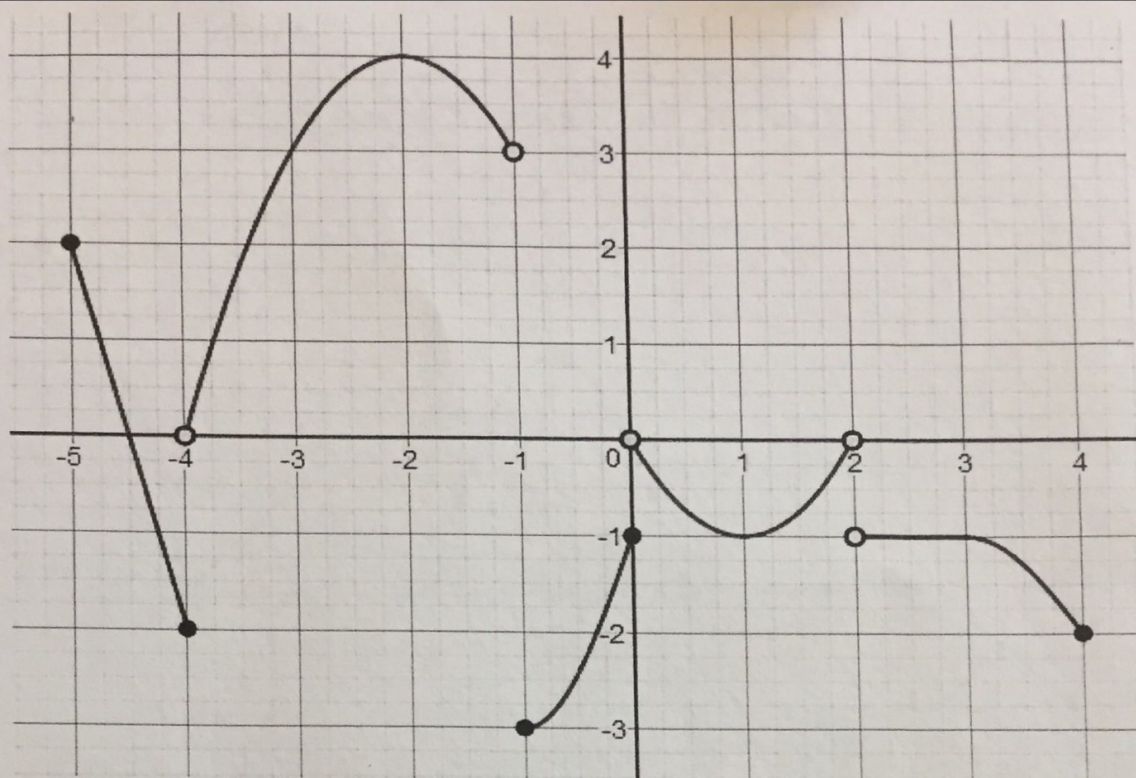
3 @ $x = 4$ Max
-1 @ $x = -4$

12) What is the domain?

$[-4, 3.5) \cup (3.5, 4]$

13) What is the range?

$[-1, 2.2) \cup (2.2, 3]$



Using the graph of the above function, $g(x)$ answer the following questions.

14) For what interval(s) is $g(x) > 0$?

$$[-5, -4.5) \cup (-4, -1)$$

15) For what interval(s) is $g(x) < 0$?

$$(-4.5, -4] \cup [-1, 2) \cup (2, 4]$$

16) What is the domain?

$$[-5, 2) \cup (2, 4]$$

17) What is the range?

$$[-3, 4]$$

18) What is the x-intercept(s) of the function?

$$(-4.5, 0)$$

19) What is the y-intercept of the function?

$$(0, -1)$$

20) For what interval is the function increasing?

$$(-4, -2) \cup (-1, 0) \cup (1, 2)$$

21) For what interval is the function decreasing?

$$(-5, -4) \cup (-2, -1) \cup (0, 1) \cup (3, 4)$$

22) For what interval is the function constant?

$$(2, 3)$$

23) What are the relative maximum and minimum?

Max none

Min: -1 @ $x=1$

24) What are the absolute maximum and minimum?

Max 4 @ $x=-2$

Min -3 @ $x=-1$

25) Is this function continuous?

No

jump discontinuity