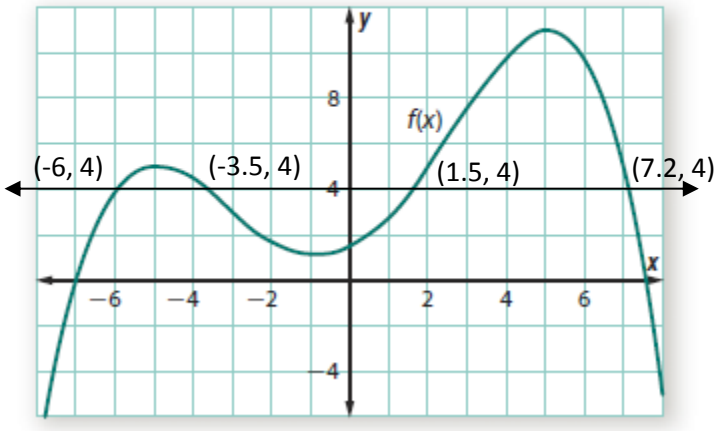
PC Follow-up: Solving Inequalities from a Graph (C18-C20) Name: _____

Use information from this graph of the function $f(x)$ to answer the questions that follow.



A) When I read the questions, the first thing I did was draw a horizontal line across the graph where $f(x) = 4$. This is my reference line to answer both #1 and #2. The intersection points were not perfectly clear on a couple of them, so I estimated.

B) When I wanted to include the endpoints, I used $\leq$ or $\geq$ in my inequality, brackets like this: [ ] in interval notation, and closed circles on my number line.

C) If I did not want to include the endpoints, I used $<$ or $>$ in my inequality, parenthesis like this: ( ) in my interval notation, and open circles on my number line.

1. Describe the values of x for which $f(x) \geq 4$ using the following.

For this problem, I am including the endpoints and any part of the graph that is above my reference line. F(x) is above the reference line between the x-values of -6 and -3.5 and between the x-values of 1.5 and 7.2.

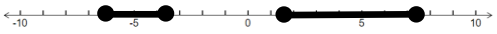
a. inequalities

$-6 \leq x \leq -3.5$ or $1.5 \leq x \leq 7.2$

b. interval notation

$[-6, -3.5] \cup [1.5, 7.2]$

c. a number line graph



2. Describe the values of x for which $f(x) < 4$ using the following.

For this problem, I am looking for any part of the graph that is below my reference line, NOT including the endpoints. F(x) is below the reference line for all x-values up to -6, between the x-values of -3.5 and 1.5, and all x-values beyond 7.2.

a. inequalities

$x < -6$ or $-3.5 < x < 1.5$ or $x > 7.2$

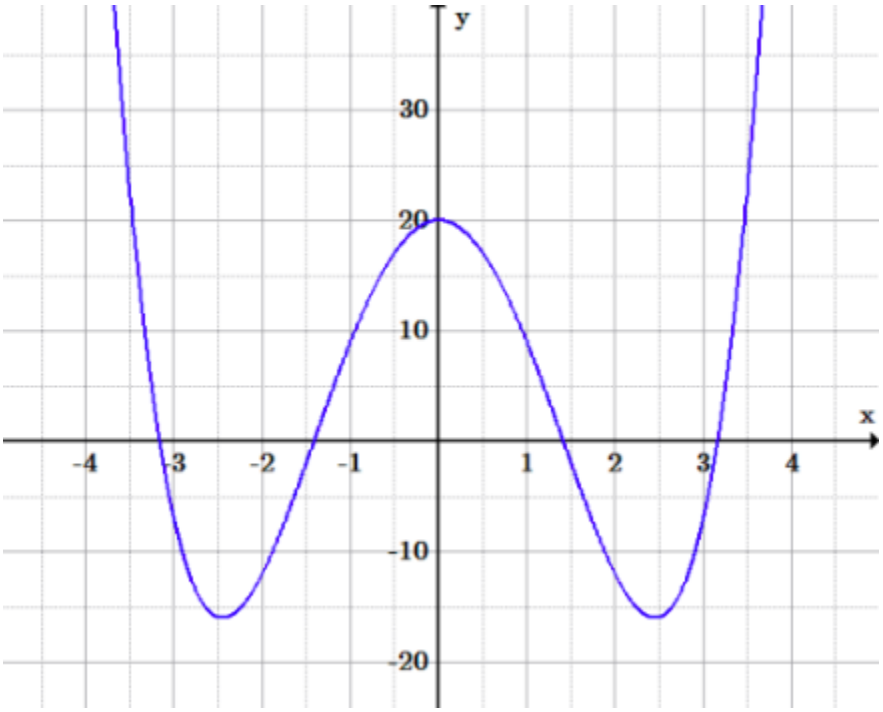
b. interval notation

$(-\infty, -6) \cup (-3.5, 1.5) \cup (7.2, \infty)$

c. a number line graph

Additional Practice on the Back

Additional Practice:



Use the graph above to find the following:

1) Find all the values of x where f(x) = 10. (Drawing a line should help.) List them here:

2) Write inequalities to describe the values for x where f(x) > 10. Think about whether you should use < or $\leq$ and whether you are looking for when the graph is above or below the line.

3) Write the inequalities from #2 as intervals. Remember to be clear about whether or not you are including the endpoints. Connect the intervals with U to represent the word "or."

4) Draw a number line.

5) On the number line in #4, show the values for x that satisfy f(x) > 10. Again, be clear about whether you are including the endpoints.