Lesson 1.2 - Defining Limits and Using Limit Notation

AP Calc. AB/BC

Warmup: Questions from CA1 - Lesson 1.1?

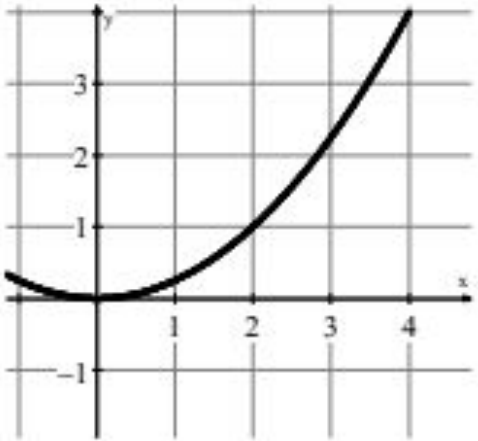
If you haven’t finished the CA worksheet from yesterday take it out and continue to work on it during this time.

1.2 Defining Limits

Notes

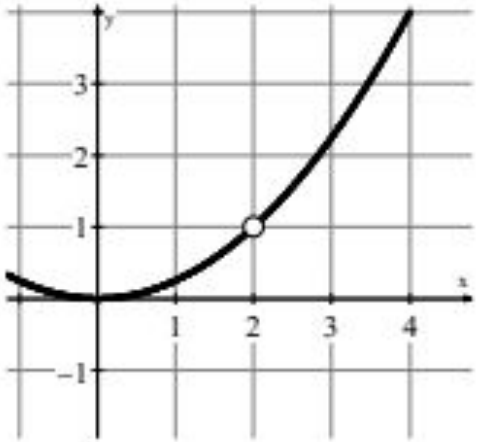
Limits

As x approaches ___, $f(x)$ approaches ___.



$\lim_{x \to 2} f(x) =$

$f(2) =$



$\lim_{x \to 2} f(x) =$

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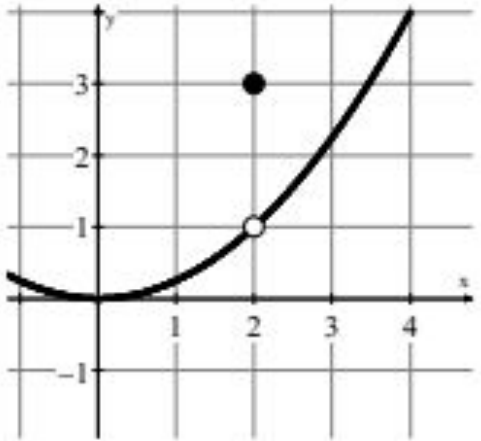
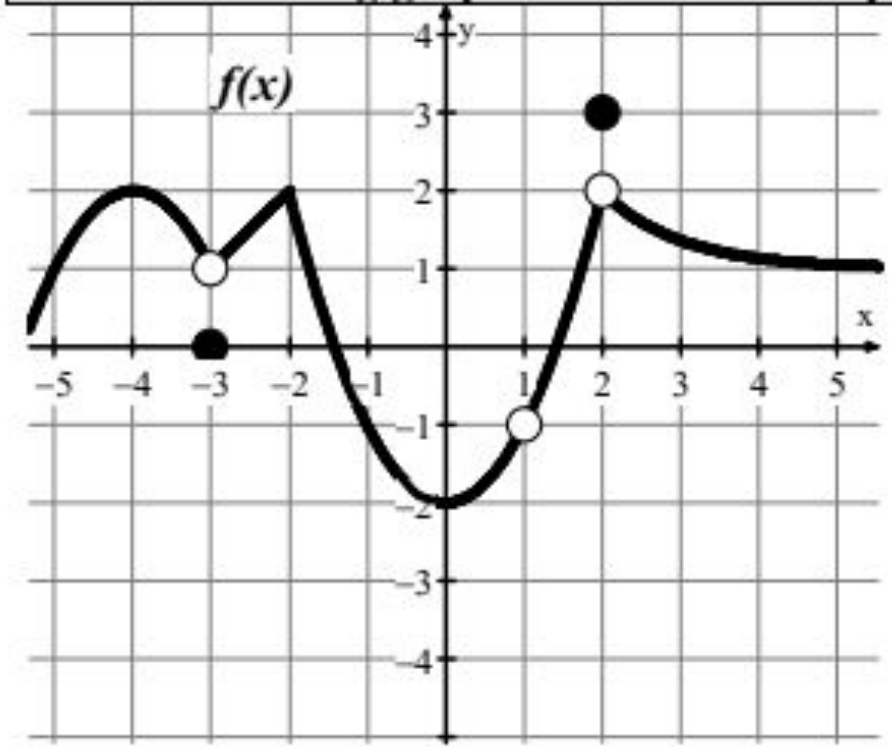


$\lim_{x \to 2} f(x) =$

$f(2) =$

Use the following graph to evaluate each problem.



1. $\lim_{x \to 1} f(x) =$

2. $f(-3) =$

3. $\lim_{x \to 2} f(x) =$

4. $f(2) =$

5. $f(1) =$

6. $f(-2) =$

7. $\lim_{x \to 0} f(x) =$

8. $\lim_{x \to -3} f(x) =$

9. Give an interpretation of the statement $\lim_{x \to 7} f(x) = 10$

A limit does NOT tell us the value of $f(x)$. It just tells us what the function approaches!

True or false? $f(1) = \lim_{x \to 1} f(x)$ in all cases.

True or false? $f(1) \neq \lim_{x \to 1} f(x)$ in all cases.

Notes Filled In:

AP Calc. AB/BC - Lesson 1.2 - Filled In

Practice - Test Prep.

Take the next 5-10 minutes to work together on the practice - test prep section of our notes.

We will go through it together on the board after the time is up!

Give an interpretation of each statement.

1. $\lim_{x \to 1} f(x) = 9$

As x approaches 1, $f(x)$ approaches 9.

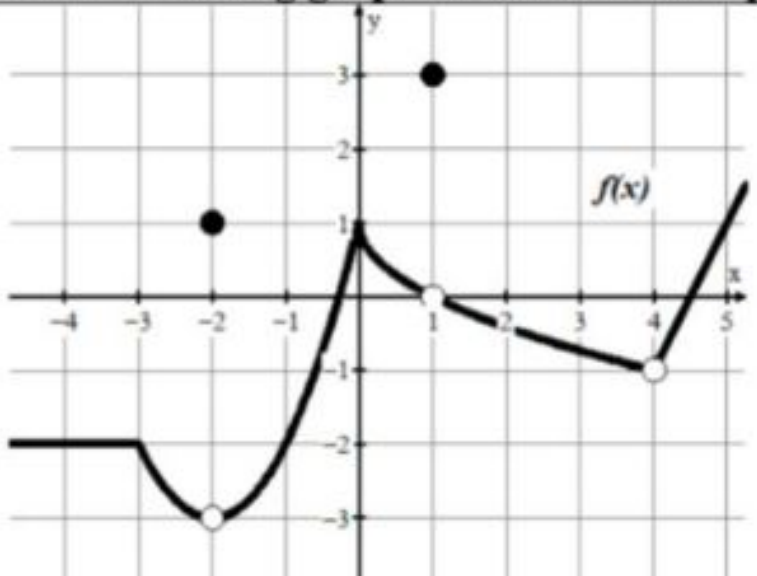
2. $\lim_{x \to -2} f(x) = 3$

As x approaches -2, $f(x)$ approaches 3.

3. $\lim_{x \to 4} f(x) = -8$

As x approaches 4, $f(x)$ approaches -8.

Use the following graph to evaluate each problem.



4. $f(-2) =$ 1

5. $\lim_{x \to 1} f(x) =$ 0

6. $\lim_{x \to -2} f(x) =$ −3

7. $\lim_{x \to 0} f(x) =$ 1

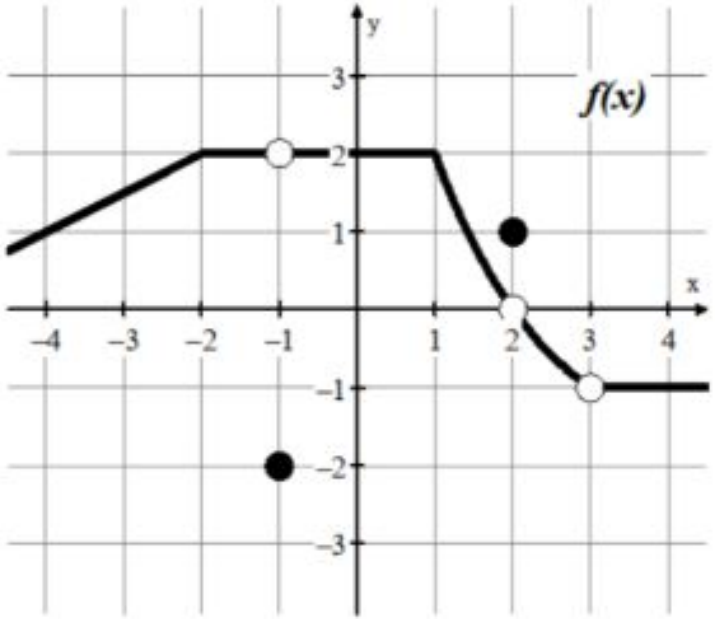
8. $f(4) =$ und.

9. $\lim_{x \to 4} f(x) =$ −1

10. $\lim_{x \to -4} f(x) =$ −2

11. $f(1) =$ 3

Use the following graph to evaluate each problem.



12. $\lim_{x \to -1} f(x) =$ 2

13. $\lim_{x \to 3} f(x) =$ −1

14. $f(2) =$ 1

15. $\lim_{x \to -2} f(x) =$ 2

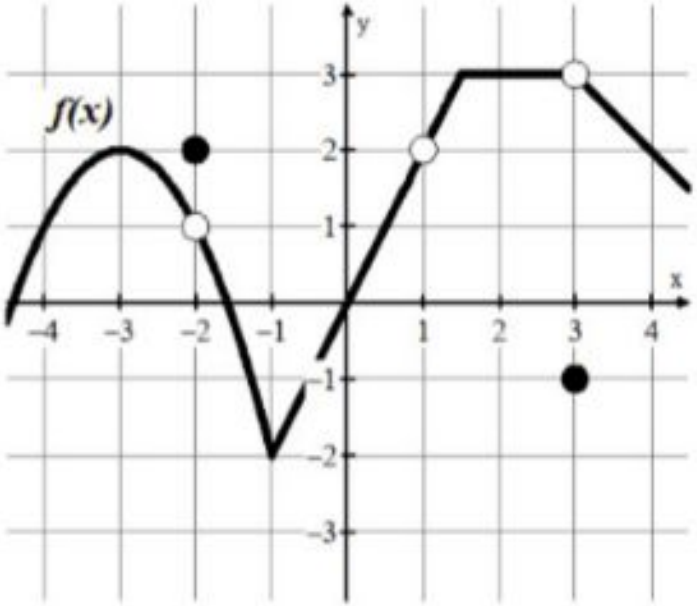
16. $\lim_{x \to 1} f(x) =$ 2

17. $f(3) =$ Und.

18. $f(-1) =$ −2

19. $\lim_{x \to 2} f(x) =$ 0

Use the following graph to evaluate each problem.



20. $\lim_{x \to 2} f(x) =$ 3

21. $f(1) =$ Und.

22. $\lim_{x \to 3} f(x) =$ 3

23. $\lim_{x \to -2} f(x) =$ 1

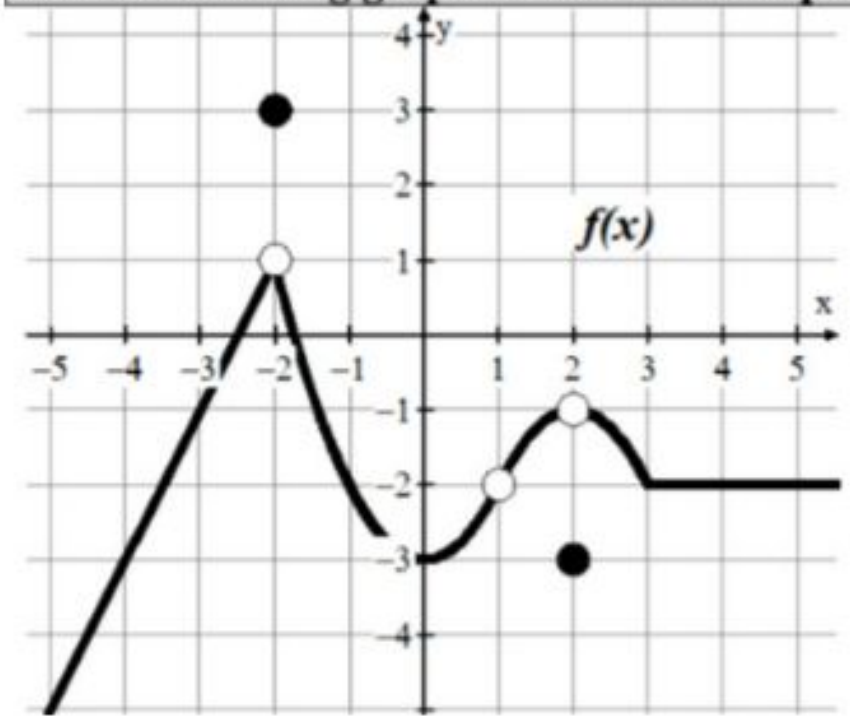
24. $\lim_{x \to 1} f(x) =$ 2

25. $f(-2) =$ 2

26. $\lim_{x \to -3} f(x) =$ 2

27. $f(3) =$ -1

Use the following graph to evaluate each problem.



28. $\lim_{x \to -2} f(x) =$ 1

29. $\lim_{x \to 1} f(x) =$ -2

30. $\lim_{x \to 2} f(x) =$ −1

31. $f(-2) =$ 3

32. $f(1) =$ Und.

33. $\lim_{x \to 0} f(x) =$ -3

34. $\lim_{x \to -4} f(x) =$ −3

35. $f(2) =$ -3

Test Prep

36. Let f be a function that is defined for all real numbers x. Of the following, which is the best interpretation of the statement $\lim_{x \to 4} f(x) = 8$.

(A) The value of the function f at $x = 4$ is 8.

(B) The value of the function f at $x = 8$ is 4.

(C) As x approaches 4, the values of $f(x)$ approach 8.

(D) As x approaches 8, the values of $f(x)$ approach 4.

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37. Let f be a function that is defined for all real numbers x. Of the following, which is the best interpretation of the statement $\lim_{x \to -1} f(x) = 2$.

(A) As x approaches 2, the values of $f(x)$ approach -1

(B) The value of the function f at $x = -1$ is 2.

(C) The value of the function f at $x = 2$ is -1.

(D) As x approaches -1, the values of $f(x)$ approach 2.

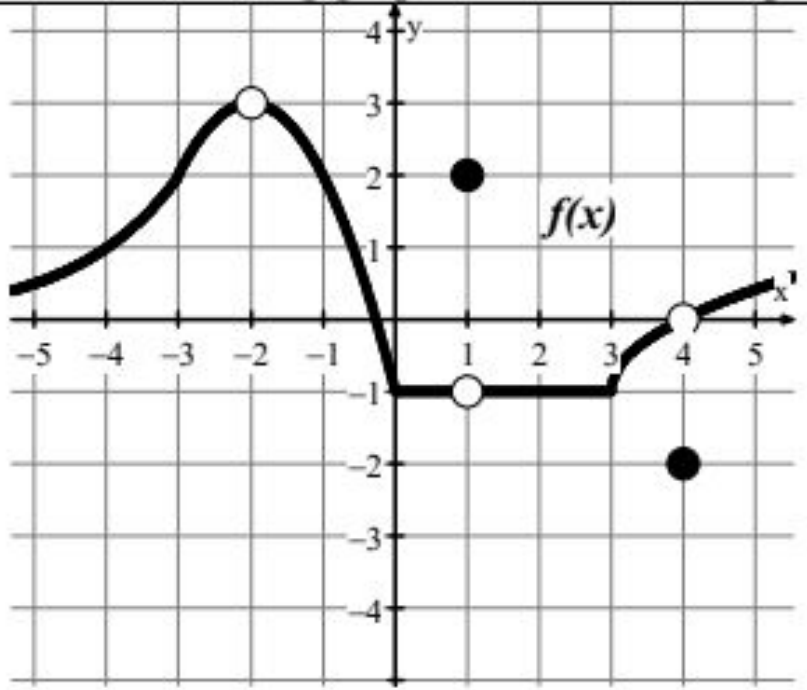
Independent Work Time

Please work on the CA worksheet during this time.

We will go through any questions from the CA worksheet tomorrow during the Warmup.

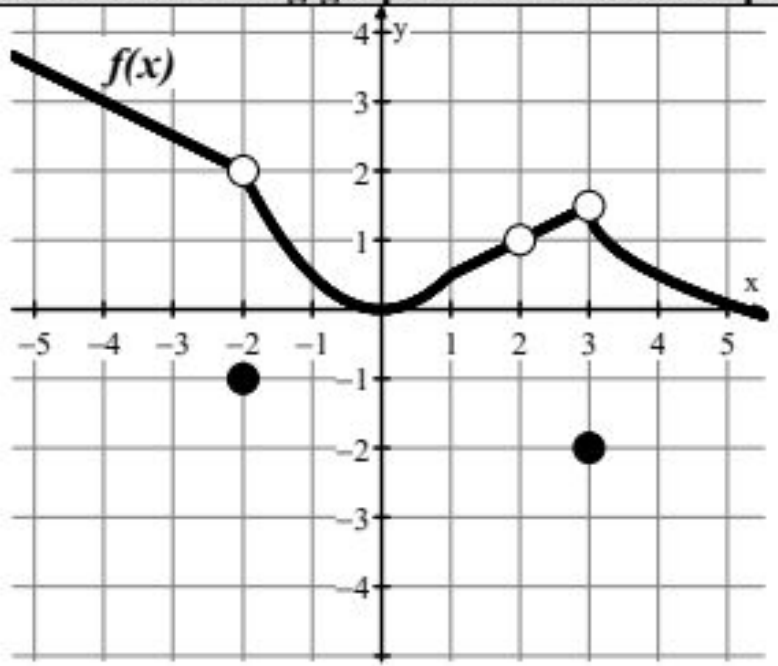
If you finish the CA worksheet early then you can go to AP Classroom and work on homework, step-by-step, watch a daily video, or utilize a different resource from GC

Use the following graph to evaluate each problem.



1. $\lim_{x \to -2} f(x) =$	2. $f(4) =$
3. $f(-2) =$	4. $\lim_{x \to -1} f(x) =$
5. $\lim_{x \to 4} f(x) =$	6. $\lim_{x \to 0} f(x) =$
7. $\lim_{x \to 1} f(x) =$	8. $f(1) =$

Use the following graph to evaluate each problem.



9. $\lim_{x \to 2} f(x) =$	10. $f(-2) =$
11. $\lim_{x \to -4} f(x) =$	12. $f(3) =$
13. $\lim_{x \to -2} f(x) =$	14. $\lim_{x \to 0} f(x) =$
15. $f(2) =$	16. $\lim_{x \to 3} f(x) =$

Answers to 1.2 CA #1

1. 3	2. -2	3. undefined	4. 2
5. 0	6. -1	7. -1	8. 2
9. 1	10. -1	11. 3	12. -2
13. 2	14. 0	15. undefined	16. 1.5