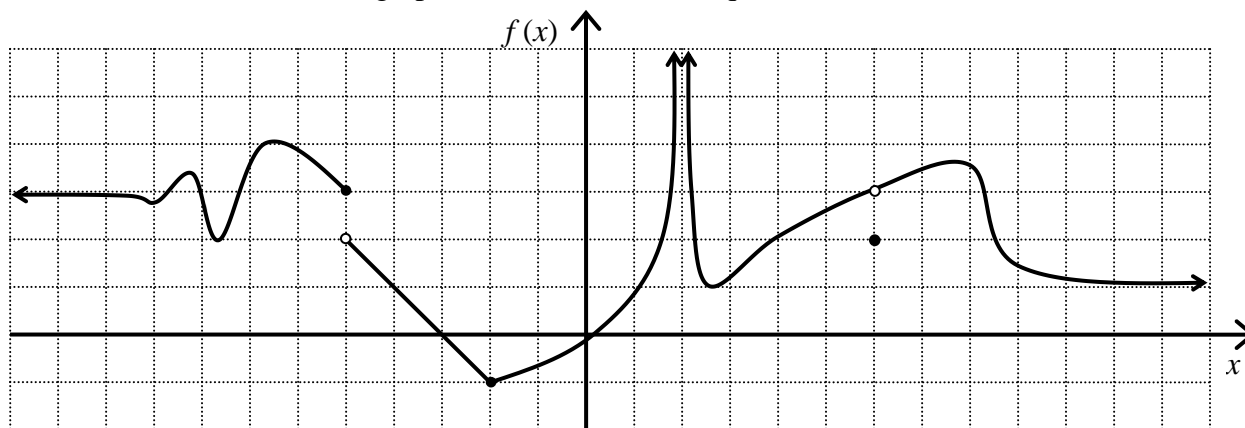


### Class Drill 3: Limits and Continuity

Use the graph below to answer the questions that follow.



(1) For each asymptote, give the line equation and say whether it is horizontal or vertical.

(2)  $\lim_{x \rightarrow -\infty} f(x) =$

(3)  $\lim_{x \rightarrow -5} f(x) =$

(4)  $\lim_{x \rightarrow -2} f(x) =$

(5)  $\lim_{x \rightarrow 2} f(x) =$

(6)  $\lim_{x \rightarrow 6} f(x) =$

(7)  $\lim_{x \rightarrow \infty} f(x) =$

(8) Is  $f$  continuous at  $a = -5$ ? If not, explain why not.

(9) Is  $f$  continuous at  $a = -2$ ? If not, explain why not.

(10) Is  $f$  continuous at  $a = 2$ ? If not, explain why not.

(11) Is  $f$  continuous at  $a = 6$ ? If not, explain why not.

Remember that for a function  $f$  to be continuous at some number “ $a$ ”, the function must pass these three tests:

Test 1:  $\lim_{x \rightarrow a} f(x)$  must exist

Test 1a:  $\lim_{x \rightarrow a^-} f(x)$  must exist

Test 1b:  $\lim_{x \rightarrow a^+} f(x)$  must exist

Test 1c: The numbers in test 1a and 1b must agree.

Test 2:  $f(a)$  must exist

Test 3: The numbers in test 1 and test 2 must agree.