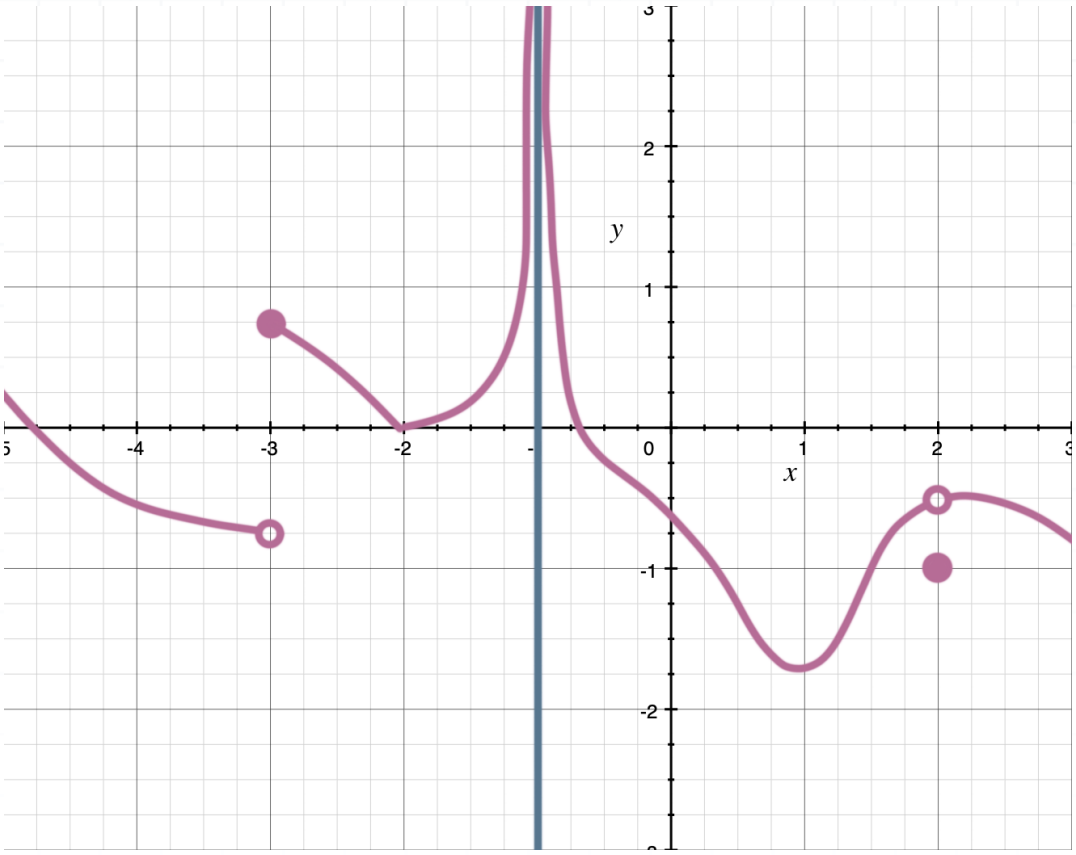
Topic: Crazy graphs

Question: Use the graph to find the function's limit as $x \to -1$.



Answer choices:

A $\lim_{x \to -1} f(x) = 0$

B $\lim_{x \to -1} f(x) = \text{DNE}$

C $\lim_{x \to -1} f(x) = \infty$

D $\lim_{x \to -1} f(x) = -\infty$

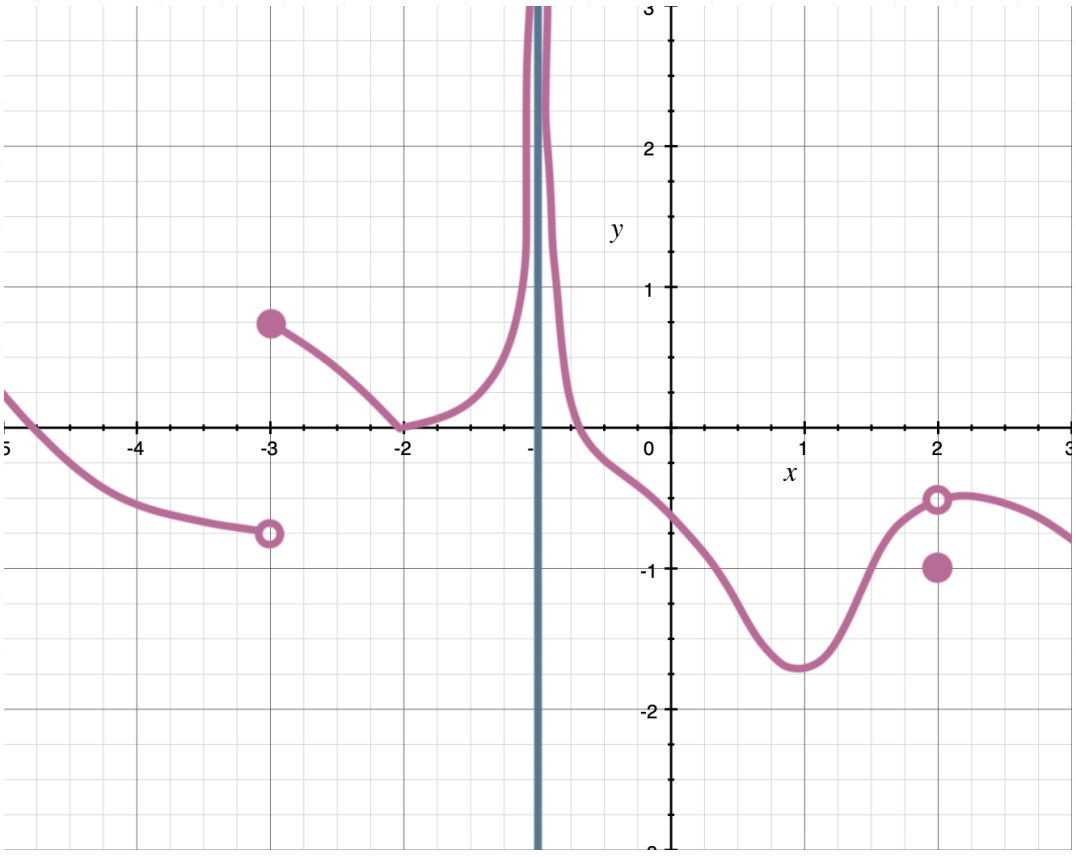
Solution: C

Using the graph, at $x = -1$, the function is approaching ∞ from the left side and ∞ from the right side, so the one-sided limits are equal and the general limit is also ∞.

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

Topic: Crazy graphs

Question: Use the graph to find the function's limit as $x \to -3^-$ and $x \to -3^+$.



Answer choices:

A $\lim_{x \to -3^-} f(x) = 0.75$ $\lim_{x \to -3^+} f(x) = -0.75$

B $\lim_{x \to -3^-} f(x) = -0.75$ $\lim_{x \to -3^+} f(x) = -0.75$

C $\lim_{x \to -3^-} f(x) = 0.75$ $\lim_{x \to -3^+} f(x) = 0.75$

D $\lim_{x \to -3^-} f(x) = -0.75$ $\lim_{x \to -3^+} f(x) = 0.75$

Solution: D

Using the graph, we'll look at the limit as x gets close to -3 from the left side. We can see that

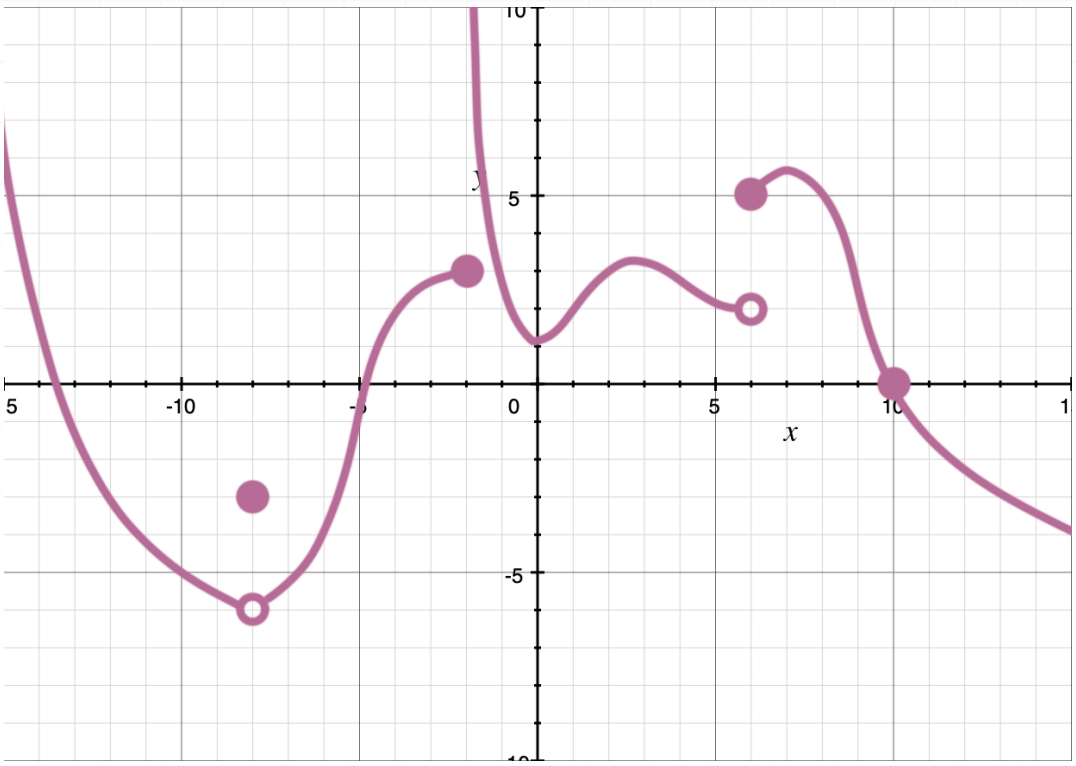
$$\lim_{x \to -3^-} f(x) = -0.75$$

And as x gets close to -3 from the right side, we can see that

$$\lim_{x \to -3^+} f(x) = 0.75$$

Topic: Crazy graphs

Question: Use the graph to find the function's limit as $x \to -2$.



Answer choices:

A $\lim_{x \to -2} f(x) = \text{DNE}$

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

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

D $\lim_{x \to -2} f(x) = 0$

Solution: A

Using the graph, we'll look at the limit as x gets close to -2 from the left side. We can see that

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

And as x gets close to -2 from the right side, we can see that

$$\lim_{x \to -2^+} f(x) = \infty$$

Because the left- and right-hand limits aren't equal, we've proven that the general limit does not exist at $x = -2$.