

10.3 More on Limits

Target 9C: Evaluate a limit of a function graphically
Target 9D: Calculate one-sided limits and two-sided limits

Review of Prior Concepts

Given $\lim_{x \rightarrow 3} f(x) = 2$ and $\lim_{x \rightarrow 3} g(x) = -1$, find:

a) $\lim_{x \rightarrow 3} (2f(x) + g(x))$

b) $\lim_{x \rightarrow 3} \frac{(g(x))^2}{f(x) - 4}$

More Practice

Limits Analytically

<http://www.ck12.org/book/CK-12-Precalculus-Concepts/section/14.4/>

<http://www.ck12.org/book/CK-12-Precalculus-Concepts/section/14.5/>

<http://precalculus.flippedmath.com/151-limits-analytically.html>

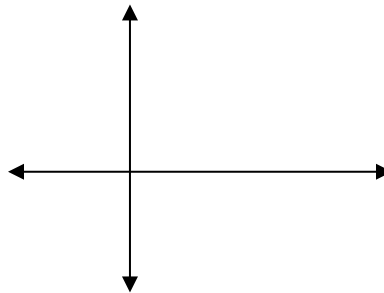
<http://www.barrington220.org/cms/lib8/IL01001296/Centricity/Domain/321/1.3%20D1%20Ans.pdf>

<https://youtu.be/-gjURkNuh9o>

<https://youtu.be/MspCIN-r8C0>

Finding Limits Graphically

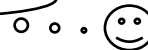
$$\lim_{x \rightarrow c} f(x) = L$$



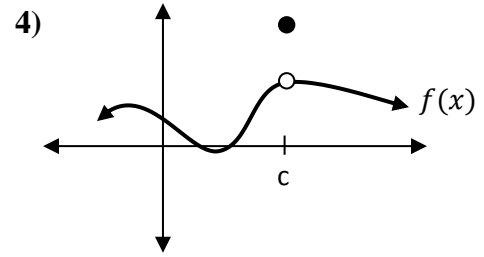
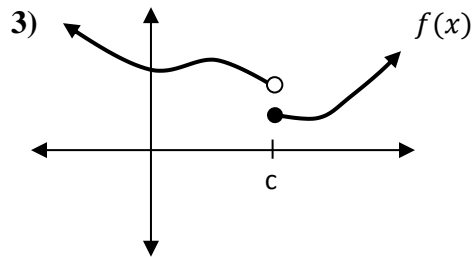
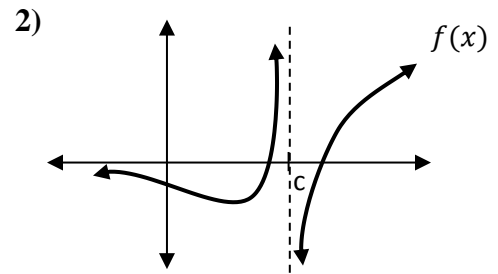
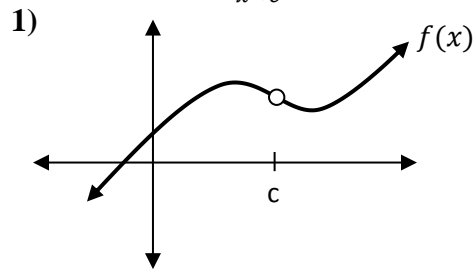
In order for $\lim_{x \rightarrow c} f(x)$ to exist,

$$\lim_{x \rightarrow c^-} f(x) \text{ has to equal } \lim_{x \rightarrow c^+} f(x)$$

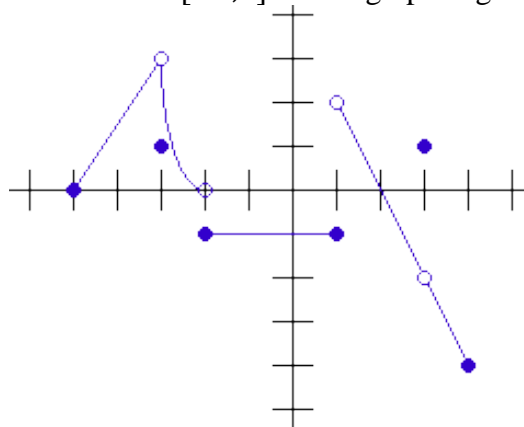
“limit from the left = limit from the right”



Examples: Does $\lim_{x \rightarrow c} f(x)$ exist? Explain why or why not.



Let g be a function defined on the interval $[-5, 4]$ whose graph is given as:



Using the graph, find the following limits if they exist, and, if not, explain why not.

1.) $\lim_{x \rightarrow 3} g(x)$

6.) $\lim_{x \rightarrow 1} g(x)$

2.) $\lim_{x \rightarrow 0} g(x)$

7.) $\lim_{x \rightarrow -2^-} g(x)$

3.) $\lim_{x \rightarrow -3} g(x)$

8.) $\lim_{x \rightarrow 4} g(x)$

4.) $\lim_{x \rightarrow 1^+} g(x)$

9.) $\lim_{x \rightarrow 2} g(x)$

5.) $\lim_{x \rightarrow 1^-} g(x)$

10.) $\lim_{x \rightarrow -2^+} g(x)$

More Practice

Limits Graphically

<http://www.coolmath.com/precaculus-review-calculus-intro/precaculus-algebra/21-rational-functions-limits-infinity-right-left-01>

<https://www.khanacademy.org/math/ap-calculus-ab/limits-basics-ab/limits-from-graphs-ab/v/limits-from-graphs-undefined>

<http://precaculus.flippedmath.com/23-limits-graphically.html>

<http://philschatz.com/precaculus-book/contents/m49452.html>

<http://www.mathsisfun.com/calculus/limits.html>

<https://youtu.be/IkIVRSonvFQ>

<https://youtu.be/UkjgJQaGx98>

https://youtu.be/XOu_LFGai0A

Homework Assignment

p.826 #27–33odd,37–45odd