

Take it to the Limit!

Go to the following website to explore the concept of a limit.
<http://www.coolmath.com/lesson-whats-a-limit-1.htm>

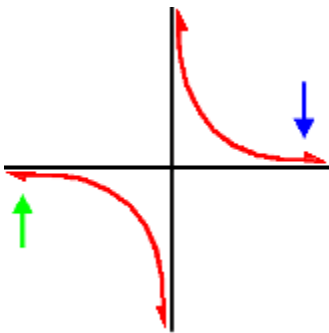
The first description of a limit is a geometric example.

Complete the statement: As the _____ of the polygon _____, the _____ is getting closer and closer to becoming the _____!

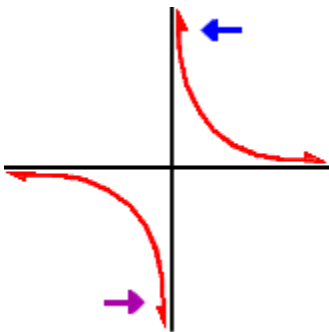
Using limit notation, $\lim_{n \rightarrow \infty} (n\text{-gon}) = \text{circle}$.

Complete the statement: The first numerical example says: $\lim_{n \rightarrow \infty} \left(\frac{n}{n+1} \right) = \text{_____}$.

The second numerical example says: $\lim_{n \rightarrow \infty} \left(\frac{1}{n} \right) = 0$. Explain this in your own words with reference to the graphical representation below.



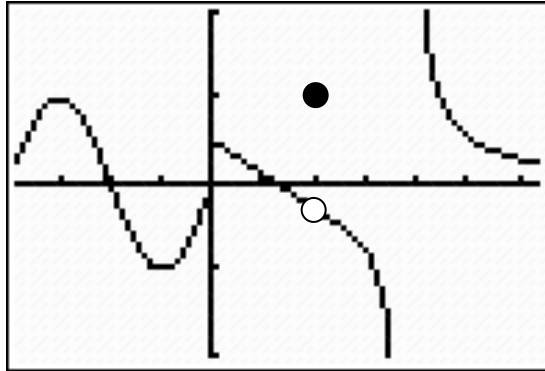
But what happens as x approaches 0? Use the limit notation found on the website to answer this question as you describe what is happening as you approach 0 from the left and from the right.



Does the $\lim_{x \rightarrow 0} \left(\frac{1}{x} \right)$ exist? Why or why not?

After reading through the rest of the lesson, answer the questions on the back of this paper.

$f(x)$



1) $\lim_{x \rightarrow -3} f(x) = \underline{\hspace{2cm}}$

2) $\lim_{x \rightarrow 0^-} f(x) = \underline{\hspace{2cm}}$

This indicates x is approaching 0 from the left.

3) $\lim_{x \rightarrow 0^+} f(x) = \underline{\hspace{2cm}}$

4) $\lim_{x \rightarrow 0} f(x) = \underline{\hspace{2cm}}$

This indicates x is approaching 0 from the right.

5) $\lim_{x \rightarrow 2^-} f(x) = \underline{\hspace{2cm}}$

6) $\lim_{x \rightarrow 2^+} f(x) = \underline{\hspace{2cm}}$

7) $f(2) = \underline{\hspace{2cm}}$

8) $\lim_{x \rightarrow 2} f(x) = \underline{\hspace{2cm}}$

9) $\lim_{x \rightarrow 4^-} f(x) = \underline{\hspace{2cm}}$

10) $\lim_{x \rightarrow 4^+} f(x) = \underline{\hspace{2cm}}$

11) $\lim_{x \rightarrow 4} f(x) = \underline{\hspace{2cm}}$

12) $\lim_{x \rightarrow \infty} f(x) = \underline{\hspace{2cm}}$

Extra Credit – What is the name of the musical group that sings the song for which this worksheet is name after?