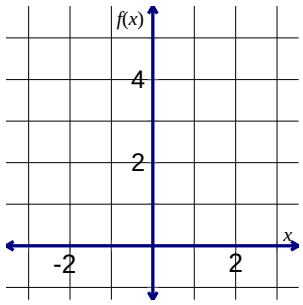
IB Math HL 1 Introduction to Limits

1. On your GFC, plot the graph of $f(x)=\dfrac{x^2-1}{x-1}$

Sketch the result.



2. Complete the table.

x	0.8	0.9	0.99	0.999	1	1.001	1.01	1.1	1.2
$f(x)$									

3. a. Pre-Calculus Question: What feature does the graph of $f(x)$ have at $x = 1$?

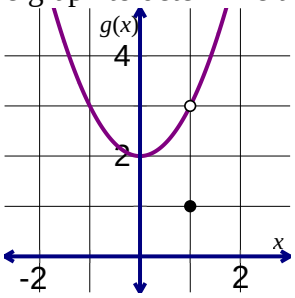
b. Calculus Question: What is the **limit** of $f(x)$ as x approaches 1?

Same question in Calculus notation: $\lim\limits_{x\to 1} f(x) =$ _____

Informal Definition of Limit #1:	**Informal Definition of Limit #2:**
What y-value does $f(x)$ get <u>close</u> to as x <u>approaches</u> c? <u>Close</u>: as close as you need to be convinced of the result <u>Approaches</u>: closer and closer but not actually there* *This means that, for the purpose of this limit, we don't care what f(c) is or if it exists.	What is going on with the value of f(x) in a neighborhood of x = c?

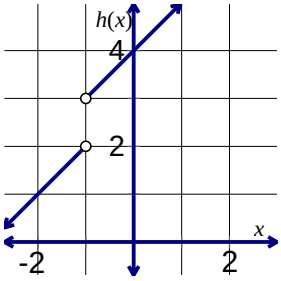
4. Use the graph to determine the indicated limit.

a.



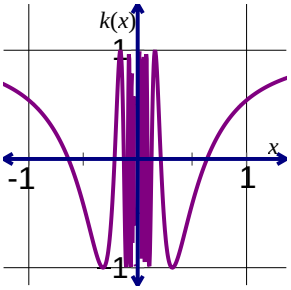
$\lim\limits_{x\to 1} g(x) =$

b.



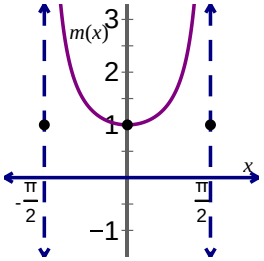
$\lim\limits_{x\to -1} h(x) =$

c.



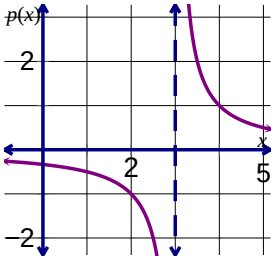
$\lim\limits_{x\to 0} k(x) =$

d.



$\lim\limits_{x\to 0} m(x) =$

e.



$\lim\limits_{x\to 3} p(x) =$