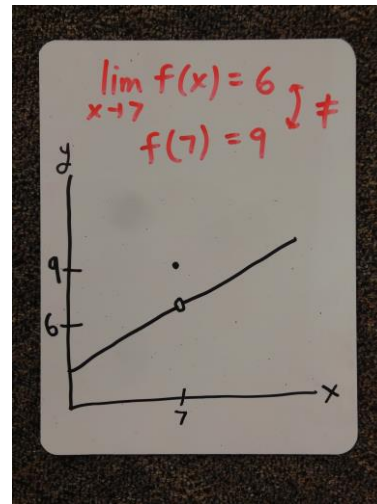


Opening Problem:

a.) limit of  $f(x) = L$   
 $x \rightarrow a$   
when  $x$  gets closer to  $a$ ,  
the function of  $f$  of  $x$   
gets really close to  $L$ .

b.)



The first picture provides an informal definition of limit; the second picture shows that the limit at a point (in this case,  $x \rightarrow 7$ ) need not agree with the function value at that point  $f(7)$ .

Second problem:

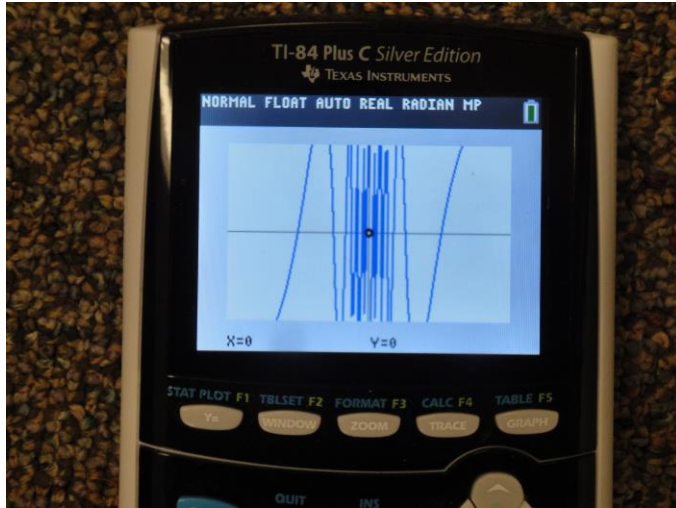
a)  $\lim_{x \rightarrow 3} 5x = 15$

b)  $\lim_{x \rightarrow 1} \frac{x^2 - 1}{x - 1} = 2$

c)  $\lim_{t \rightarrow 9} \frac{t - 9}{\sqrt{t} - 3} = 6$

Use the TABLE feature on your calculator to get the above limits. Great notation above!

Third problem:



The function oscillates more rapidly as  $x \rightarrow 0$  and it becomes less apparent what the function is approaching.  $\lim_{x \rightarrow 0} \sin(1/x)$  fails to exist!

Fourth problem:

