

Math 180  
Fall, 2008

Computer Lab #1  
Due Wednesday, October 8  
No late papers accepted! No excuses!

Let  $f(x) = \frac{x - 0.21}{|x - 0.21|}$ .

- Plot the graph of  $f$  over the interval  $-2 \leq x \leq 2$ .
- Find the limit of  $f$  as  $x \Rightarrow 0^+$ .
- Find the limit of  $f$  as  $x \Rightarrow 0^-$ .
- Does the limit of  $f$  exist as  $x \Rightarrow 0$ ? Explain.
- Is  $f$  continuous? Explain.
- State the domain and the range of the function.

There are at least two ways to graph this function. One way is with the command

```
>f:=(x - 0.21)/abs(x-0.21);  
>plot(f,x=-2..2);
```

This graph joins the two pieces of the graph with a connecting line segment -- is this correct?

A better way to graph this function is to use this command

```
>f:=(x-0.21)/abs(x-0.21);  
>plot(f,x=-2..2,style=point);
```

The cost in millions of dollars for a governmental agency to seize  $x\%$  of an illegal drug is

$$C(x) = \frac{528x}{100 - x}, 0 \leq x \leq 100$$

- Use Maple to graph the function.
- Find the cost of seizing 25%.
- Find the cost of seizing 50%.
- Find the cost of seizing 75%.
- Find the limit of  $C$  as  $x \Rightarrow 100^-$ .