Open notes open book, no group work. Show work where appropriate.

2.2#14)Sketch the graph of an example of a function that satisfies all the given conditions. *(Be sure that your graph is actually of a function, credit will be partially awarded for neatness.)*

$$\lim_{x \to 0^-} f(x) = 1 \qquad \lim_{x \to 0^+} f(x) = -1 \qquad \lim_{x \to 2^-} f(x) = 0$$

$$\lim_{x \to 2^+} f(x) = 1 \qquad f(2) = 1 \qquad f(0) \text{is undefined}$$

Solution given during lecture. Get notes if you missed it.

2.2#26) Determine the infinite limit. *(no partial credit if wrong without work)*

$$\lim_{x \to -3^-} \frac{x+2}{x+3} = \infty$$

We can think of values slightly more negative than -3 such as -3.1, -3.01, … Notice that we get

-1.1/-.1 = 11 and then -1.01/-0.01 = 101. As we get closer and closer these values suggest that the function takes arbitrarily large values, so the limit goes to plus infinity.

Alternative notice that $\frac{x+2}{x+3} = 1 - \frac{1}{x+3}$ so the graph of the limiting function will be the $y = 1/x$ graph shifted three units left, one unit up and inverted vertically. This also tells us that the limit goes to infinity. Of course this is a dangerous solution unless you are confident in your graphing skills.