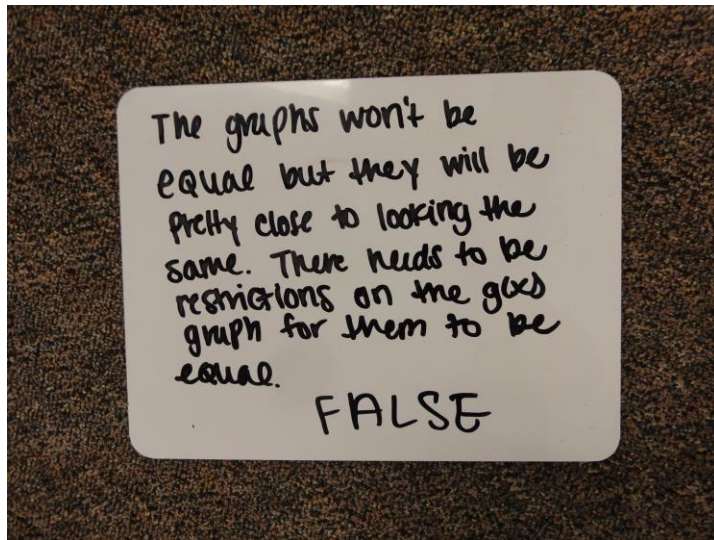
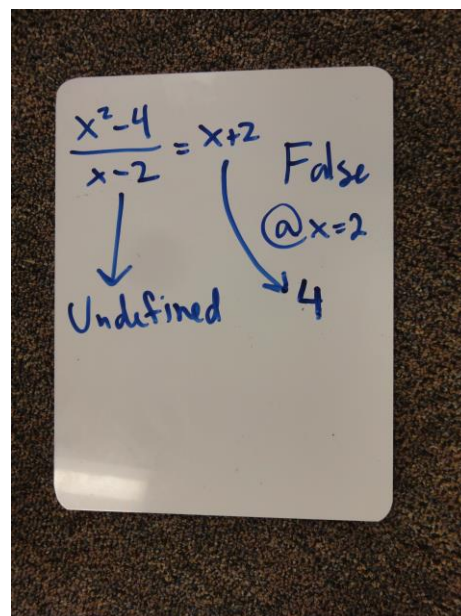
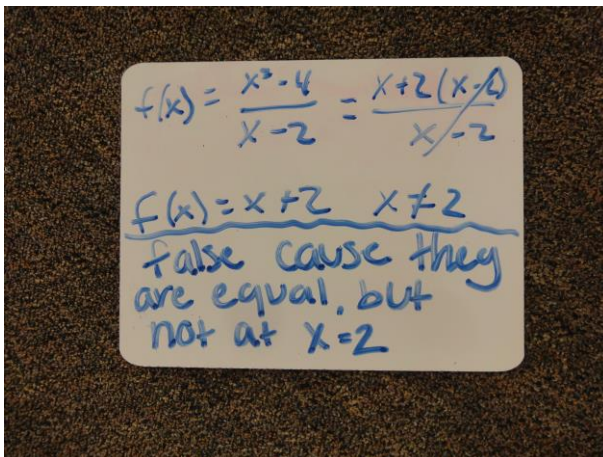


Opening problem:



The above alludes to the difference in the two functions while the pictures below make this explicit:



Finding limits analytically:

a) $\lim_{x \rightarrow 1} \frac{x^2 + x + 2}{x + 1} = 2$ plug in

b) $\lim_{x \rightarrow -3} \frac{x^2 + x - 6}{x + 3} = -5$

c) $\lim_{x \rightarrow 0} \frac{\sqrt{x+1} - 1}{x} = \frac{1}{2}$

d) $\lim_{x \rightarrow -4} \frac{\frac{1}{4} + \frac{1}{x}}{4 + x} = \frac{-1}{16}$

The above problems are spot on. We'll work on notation as we get deeper and deeper into limits.