MATH 111 - Calculus and Analytic Geometry I

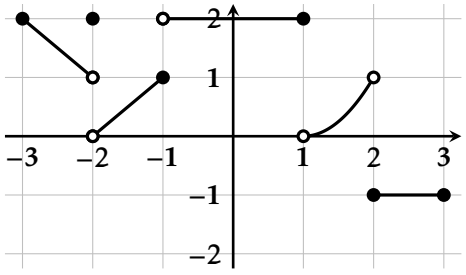
Lab 2 Worksheet

Fall 2020 | **Subhadip Chowdhury** | **Sep 1**

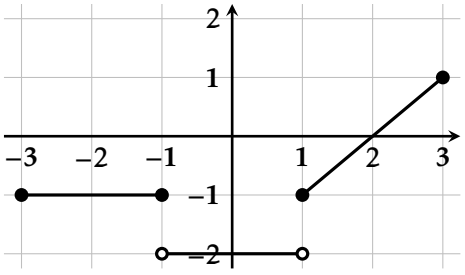
§A. Wacky Limits

These limits are wacky. Help me understand the solutions. All I have is the answers and not the reasons why the answers are what they are. Do this by providing the correct mathematical reasons/work explaining how one gets the correct answer.[1]

Graph of f



Graph of g



(a) $\lim_{x\to 0}(f(x)+g(x))$ = 0

(b) $\lim_{x\to -2^-}\frac{f(x)}{g(x)}$ = −1

(c) $\lim_{x\to -2^+}\frac{f(x)}{g(x)}$ = 0

(d) $\lim_{x\to -2}\frac{f(x)}{g(x)}$ = DNE

(e) $\lim_{x\to -1}(f(x)+g(x))$ = 0

(f) $\lim_{x\to -1}\frac{f(x)}{g(x)}$ = −1

(g) $\lim_{x\to 2}(f(x)g(x))$ = 0

(h) $\lim_{x\to 1^+} f(g(x))$ = 2 (and NOT 1)

(i) $\lim_{x\to 2^-}\frac{f(x)}{g(x)}$ = $-\infty$

(j) $\lim_{x\to 1^-} f(g(x))$ = 2

(k) $\lim_{x\to 2^+}\frac{f(x)}{g(x)}$ = $-\infty$

(l) $\lim_{x\to 2}\frac{f(x)}{g(x)}$ = $-\infty$

(m) $\lim_{x\to 3^-} f(g(x))$ = 2

(n) $\lim_{x\to -2^-} g(f(x))$ = −1

Note that this activity is only graded for participation. You will not be submitting anything. So you are responsible for your own understanding. Move on from a question only when you have fully understood what's going on there. Ask me or your teammate if you are not sure why the answer is correct. By the end of this activity, you will be able to understand how limits behaves for sum, product, ratio, and composition of functions.

[1] From Active Calculus BOALA.