These exercises are intended to help you cement your knowledge and to make concrete the theory we discussed in class. Look over and attempt the exercises before the DGD. Not all exercises will be done in the DGD due to limited time but please ensure that you ask the TA to do those exercises that you had difficulty with!

(1) Any questions left over from last week.

(2) Stewart Ch. 11.1 # 3, 5 (domain, range, and using functions of 2 variables)

(3) Stewart Ch. 11.1 # 9, 11, 15, 17, 19, 23 (level curves / contour lines / isotherms)

(4) Stewart Ch 11.1 #35–40 (matching equations to contour lines and graphs)

(5) Suppose that \( \{ (x_n, y_n) \} \in \mathbb{N} \) converges to \((a, b)\). Prove that \( \{ x_n + y_n \} \in \mathbb{N} \) converges to \(a + b\).

(6) Prove that the function \( f(x, y) = x + y \) is continuous.

(7) Stewart Ch 11.2 #5, 7, 11, 17, 19 (Finding limits of multivariable functions)

(8) Stewart Ch 11.2 #23, 29, 31, 33 (Using continuity results from single variable Analysis to determine continuity of multivariable functions)