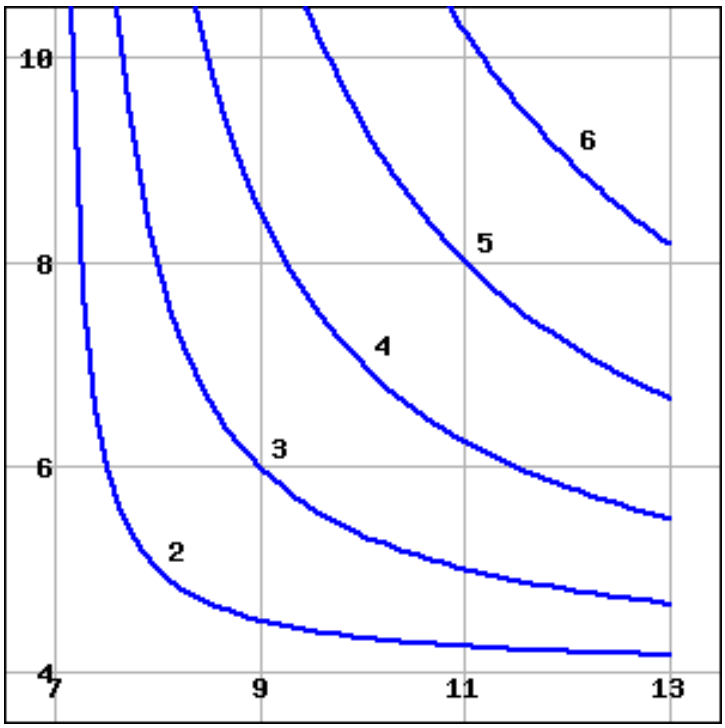
MATH 104: HOMEWORK 7

DUE DATE: IN CLASS – WEDNESDAY, APRIL 24, 2024

Fulbright University, Ho Chi Minh City, Vietnam

Read Stewart's Chapter 15.1 and 15.2 if you need to have more examples.

Problem 1. Consider the following contour lines of a function $f(x, y)$. The region we are considering is $R = [7, 13] \times [4, 10]$. Using $\Delta x = \Delta y = 2$,



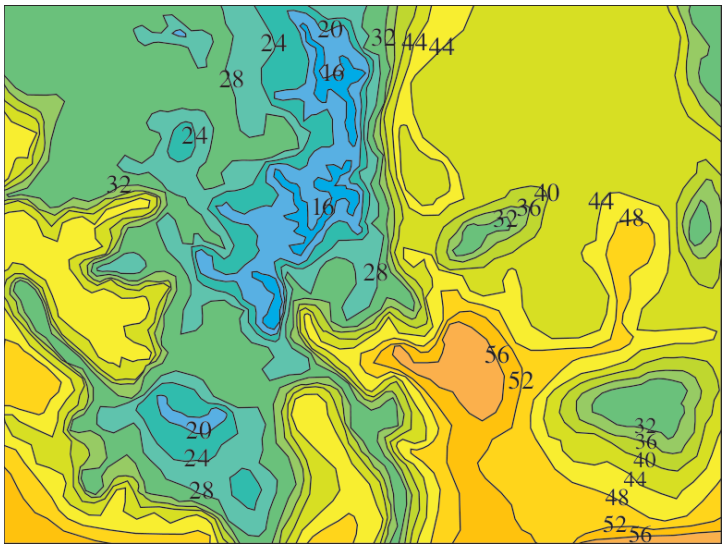
find an overestimate and an underestimate for

$$\int_R f(x, y)\, dA.$$

(Make sure to describe your process as well.)

Date: April 17, 2024.

Problem 2. The contour map shows the temperature in Fahrenheit at a certain time of a certain city in the US. Find an estimate of the average temperature of this city with $m = n = 4$.



Problem 3. Calculate

(1) $\iint_R x \sin(x+y) dA, \quad R = [0, \pi/6] \times [0, \pi/3]$
(2) $\iint_R \frac{x}{1+xy} dA, \quad R = [0,1] \times [0,1]$
(3) $\iint_R y e^{-xy} dA, \quad R = [0,2] \times [0,3]$
(4) $\iint_R \frac{1}{1+x+y} dA, \quad R = [1,3] \times [1,2]$