Math 254

The grid to the right is a map view of a 50 foot by 40 foot plot. The number in each square indicates the height (in feet) of the dirt at the center of that particular square, above some base level, given by a function f(x, y). For each iterated integral below, give a nested sum of the form [(\*+\*+···)+(\*+\*+···], where each \* represents a number, approximating the integral. For each answer, include the iterated integral given, nested sum, sum with the inner sums computed, and total sum, all in "over-and-down" form.



(a) 
$$\int_{20}^{40} \int_{10}^{50} f(x, y) \, dx \, dy$$
 (b)  $\int_{0}^{40} \int_{10}^{30} f(x, y) \, dy \, dx$ 

2. Compute the iterated integral by hand, showing all steps in an "over-and-down" manner.

(a) 
$$\int_{1}^{3} \int_{1}^{2} (x+2y) \, dy \, dx$$
 (b)  $\int_{1}^{4} \int_{0}^{3} 12xy \, dx \, dy$