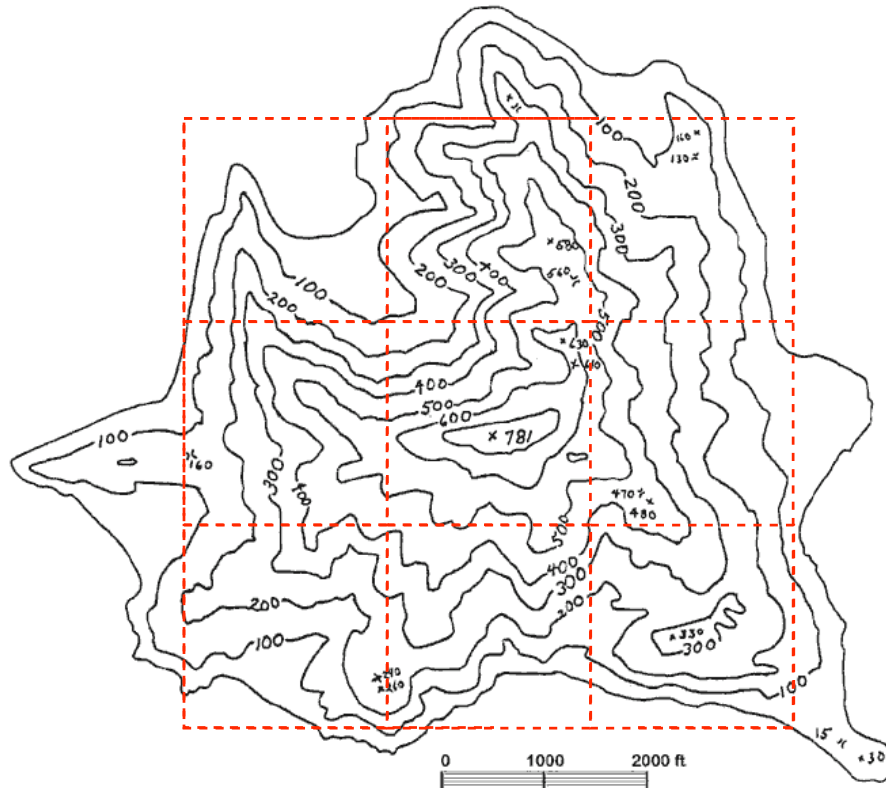


ASSIGNMENT 6, DUE FRIDAY, OCTOBER 13TH

- (1) Estimate the volume of the solid bounded by $z = 0$, $z = x + 2y^2$, and within the rectangle $x \in [0, 2]$, $y \in [0, 4]$ by using a Riemann sum with $n = m = 2$ and use the value of the function in the lower-right corner of each sub-rectangle. Repeat the estimate using the midpoint of each rectangle - which of these do you expect to be more accurate?
- (2) Estimate the volume of Angel Island, CA, in cubic feet by using the midpoint rule with a 3 by 3 subdivision as shown on the following map. The squares in the subdivision are 2000 feet on a side, and elevations are also shown in feet.



- (3) Find the value of the integral $\int \int_R 2 \, dA$, where $R = \{(x, y) | -3 \leq x \leq 3, -2 \leq y \leq 2\}$ by identifying it as the volume of a solid.
- (4) Find the value of the integral $\int \int_R 8 - x \, dA$, where $R = \{(x, y) | 4 \leq x \leq 8, -1 \leq y \leq 1\}$ by identifying it as the volume of a solid.
- (5) Calculate the following double integrals

(6) $\int_0^2 \int_{-1}^1 (x^2 + y^2) \, dy \, dx$

(7) $\int_2^4 \int_0^1 (2x + \sqrt{y}) \, dy \, dx$

$$(8) \int_1^2 \int_0^1 \frac{ye^y}{x} dy dx$$

$$(9) \int \int_R 2xye^{x^2y} dA, R = [0, 2] \times [0, 1].$$

- (10) Find the volume of the solid bounded by the planes $x = 4$, $y = 2$, the coordinate planes, and the elliptic paraboloid $z = 2 + (x - 1)^2 + 8y^2$.
- (11) Compute the average value of the function $f(x, y) = e^x \sqrt{y + e^x}$ on the rectangle $R = [0, 1] \times [0, 2]$.
- (12) Compute the average value of the function $f(x, y) = xy$ on the triangle with vertices $(0, 0)$, $(3, 0)$, and $(1, 2)$.