

Worksheet for October 8

Problems marked with an asterisk are to be placed in your math diary.

(1.*). Consider the the function $f(x, y) = xy + 2$ and the region $R = [0, 2] \times [0, 2]$. Calculate the partial sum estimating $\int \int_R f(x, y) dA$, by subdividing each interval $[0, 2]$ into two subintervals, and using for point of substitution the lower left corner of each resulting sub-rectangle. Then repeat the process taking a point clearly in the interior of each sub-rectangle. Repeat once more, subdividing each $[0, 2]$ into four subintervals, and choosing a point in the interior of each sub-rectangle.

(2.*) For $f(x, y)$ and R as in (1.), use Fubini's theorem to calculate $\int \int_R f(x, y) dA$.

(3*.) For $f(x, y)$ and R as in (1.), find a partition of R and a corresponding partial sum whose value approximates your answer in (2.) to within 10^{-3} .