MATH 253 – WORKSHEET 22
ITERATED INTEGRALS ON PLANAR DOMAINS

(1) Let D be the finite region bounded by the curves $x = y$ and $x = 2 - y^2$. Find $\iint_D y \, dA$, slicing the domain vertically.

(2) Let $R = \left\{ x^2 + y^2 \le 4 \right\}$. Evaluate $\iint_R \left(e^y x^2 \tan \left(\frac{x}{2} \right) + \sin(y^3) + 5 \right) dA$.

(3) Integrate $f(x,y) = e^{y^2}$ on the triangle with vertices $(0,0)$, $(0,3)$, $(1,3)$.

(4) Reverse the order of integration in $\int_{x=1}^{x=2} \int_{y=0}^{\ln x} f(x,y) \, \mathrm{d}y \, \mathrm{d}x$.