

MATH 202: Homework 10

due Wednesday, November 22

- (1) Let $V \subset \mathbf{R}^3$ be the solid region bounded by $x = y^2$, $y = z$, $x = y$, and $z = 0$. Evaluate $\int_V 4x + y$.
- (2) Let $C \subset \mathbf{R}^2$ be the portion of the curve $y = 2\sqrt{x}$ between $(1, 2)$ and $(9, 6)$. Find $\int_C 3y$.
- (3) Find the surface area of the torus of major radius A and minor radius B .
- (4) Evaluate the flow integral $\int_\gamma F \cdot \widehat{T}$, where γ is the parametrized curve $\gamma(t) = (\cos t, \sin t, t/3)$ defined on $0 \leq t \leq 4\pi$ and F is the vector field $F(x, y, z) = (3z, y^2, 6z)$.

Do the following problems from the textbook:

§6.7: 11, 12 (Problems 6.7.13 and 6.7.14 are extra credit, and may be turned in any time before the final!)

§9.3: 1, 2

§9.4: 1, 2, 3