

HW 32

① Find  $\iint_T (x^2 + xy + y^2) dx dy$  where

$T$  is the trapezoid with vertices

$$A = (0, 1), B = (1, 0), (1, 5) = C, D = (0, 3).$$

② Find the center of mass  $(x_{cm}, y_{cm})$  of the region  $\{(x, y) \mid 0 \leq x^3 \leq y \leq x^2\}$ . (Sketch it to get a better idea; sketch the boundary curves  $0 = x^3$ ,  $x^3 = y$ , and  $y = x^2$  first.)

③ Find the average value of  $\cos(x + 2y)$  inside the triangle with vertices  $(0, 0)$ ,  $(0, \frac{\pi}{4})$ ,  $(\frac{\pi}{4}, 0)$ .