

①  $\partial D$  is parametrized by  $x = t - t^3$ ,  $y = t^2 - t$  from  $t=0$  to  $t=1$ . HW 48



Find the center of mass of  $D$ .

Hint: What does Green's Theorem say

about  $\int_{\partial D} x \, dy$ ,  $\int_{\partial D} \frac{x^2}{2} \, dy$ , and  $\int_{\partial D} xy \, dy$ ?

② Find  $\int_C \left( \frac{dx}{y} - \frac{dy}{x} \right)$  where  $C$  is the square loop from  $(5,2)$  to  $(7,2)$  to  $(7,4)$  to  $(5,4)$  to  $(5,2)$ .

Hint:  $\partial D = C$  for what region  $D$ ?