

PSET 9 - DUE APRIL 21

1. 11.9:8 (4 points)
2. 11.15:2 (4 points)
3. 11.15:6 (4 points)
4. 11.15:13 (4 points)
5. 11.18:10 (6 points)
6. Let R, S be bounded subsets of the plane with corresponding density functions f_R, f_S respectively. Let $T = R \cup S$ and define f_T to be the appropriate density function on each component of T . Let $m(R), m(S)$ denote the respective masses of R, S . Prove

$$(\bar{x}_T, \bar{y}_T) = \frac{(\bar{x}_R m(R) + \bar{x}_S m(S), \bar{y}_R m(R) + \bar{y}_S m(S))}{m(R) + m(S)}.$$

Here \bar{x}_U denotes the center of mass of the region U . (8 points)

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