

Show all work. 5 points each.

1. Verify that $f(x, y) = \begin{cases} 4xy & 0 \leq x \leq 1, 0 \leq y \leq 1 \\ 0 & \text{else} \end{cases}$ is a joint density function and set up the integral for finding $P(X \geq \frac{1}{2})$

2. Draw the region D and find limits of integration of $\iint_D x + y \, dA$ where D is bounded by $y = \sqrt{x}$ and $y = x^2$