Pencils and Erasers Only – No Calculators Allowed.

1. Find the exact length of the polar-curve arc

\[ r = 3 \sin(\theta) \quad \text{with} \quad 0 \leq \theta \leq \pi/4. \]
2. Find the exact area of the sector indicated in problem 1. That is, find the area of the Quadrant-I region enclosed by the polar curves \( r = 3 \sin(\theta) \), \( \theta = 0 \), and \( \theta = \pi/4 \).