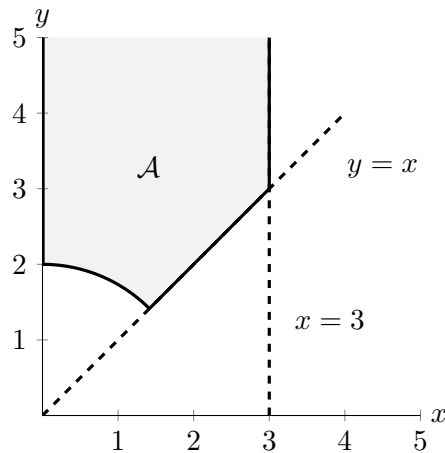


9. [9 points] The following problems are unrelated.

- a. [4 points] Let \mathcal{A} be the region graphed below, bounded by the y -axis, the curve $r = 2$ and lines $y = x$, $x = 3$. Give inequalities for r and θ which describe \mathcal{A} . Your inequalities for r may be in terms of θ . No justification is necessary.



Answer:

$$\frac{\pi}{4} \leq \theta \leq \frac{\pi}{2}$$

$$2 \leq r \leq \frac{3}{\cos(\theta)}$$

- b. [5 points] A turtle travels along the path given by the parametric equations $x = f(t)$ and $y = g(t)$ for $0 \leq t \leq 5$. Graphs of the functions $f(t)$ and $g(t)$ are given below. On the axes below, sketch a graph of the path along which the turtle moves between time $t = 0$ and $t = 5$. Label the points corresponding to the position of the turtle at times $t = 0, 1, 2, 3, 4$, and 5.

