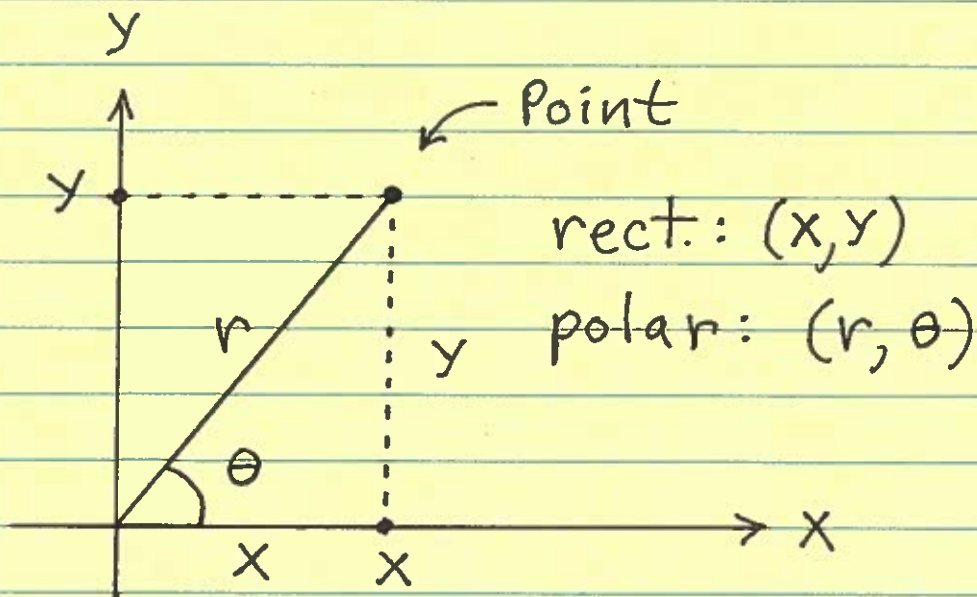


Section 15.3  
Thomas Calculus  
11th Ed.

Review of Polar Coordinates

Recall:



CONVERT  $(r, \theta)$  to  $(x, y)$ :

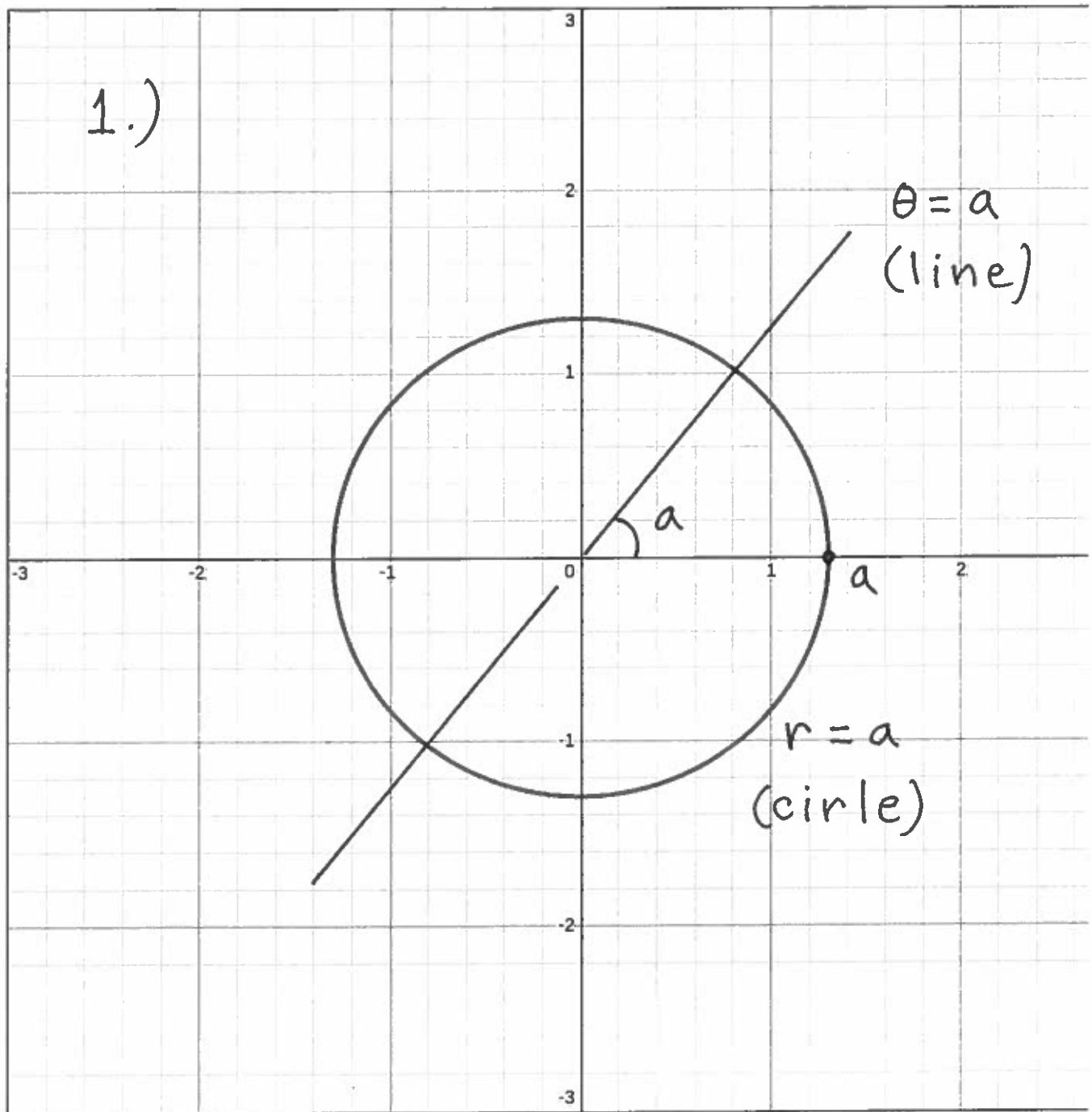
$$\left. \begin{aligned} \cos \theta &= \frac{x}{r} \\ \sin \theta &= \frac{y}{r} \end{aligned} \right\} \rightarrow \begin{cases} x = r \cos \theta \\ y = r \sin \theta \end{cases}$$

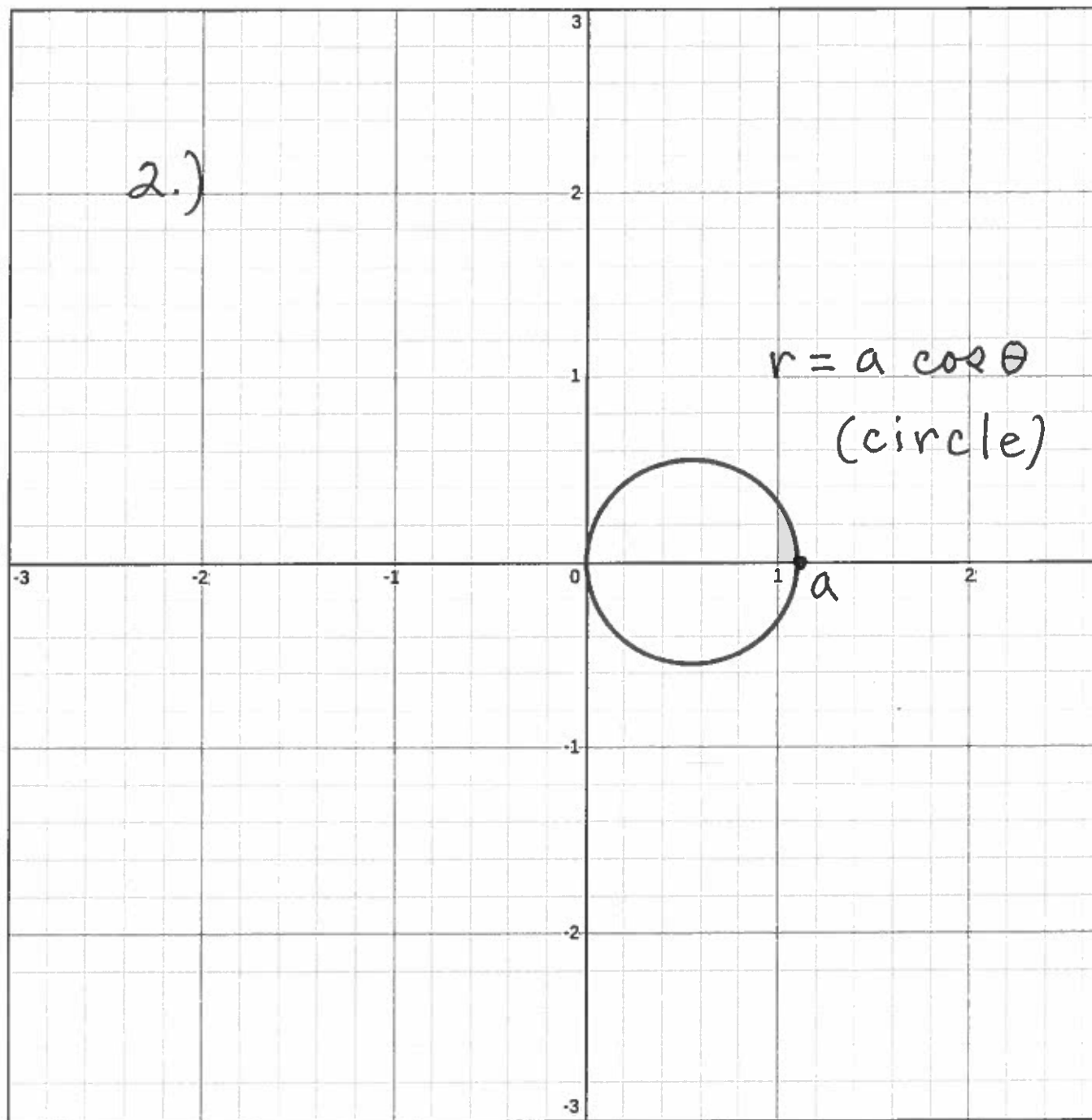
CONVERT  $(x, y)$  to  $(r, \theta)$ :

$$r^2 = x^2 + y^2 \quad \text{and}$$
$$\tan \theta = \frac{y}{x} \rightarrow \theta = \arctan \left( \frac{y}{x} \right)$$

## Common Graphs of Polar Equations

The following graphs were done using the free online Desmos Grapher.





3.)

$$r = a \sin \theta$$

(circle)

