

Convert $r = \csc(\theta)$ to rectangular form.

1) Rewrite $\csc(\theta)$ as shown:

$$r = \frac{1}{\sin(\theta)}$$

2) Multiply both sides by $\sin(\theta)$ and simplify

$$(\sin(\theta))r = \frac{1}{\sin(\theta)} (\sin(\theta))$$

$$r \sin(\theta) = 1 \cdot \left(\frac{\sin(\theta)}{\sin(\theta)} \right)$$

$$r \sin(\theta) = 1$$

3) The conversion between polar and rectangular coordinates states that $y = r \sin(\theta)$.

This means you should replace the left side with y .

$$r \sin(\theta) = 1$$

$$\underbrace{\hspace{1.5cm}}_y$$

$$y = 1$$

5) This tells us that we have a horizontal line passing through $y = 1$. This is shown below.

