KEY to Converting Polar to Rectangular

1. $r=\tan \theta \sec \theta$
$r=\tan \theta \cdot \frac{1}{\cos \theta}$
$r \cos \theta=\tan \theta$
$x=\frac{y}{x}$
$y=x^{2}$ Chare $N$.
2. $r^{2}=\tan \theta \sec ^{2} \theta$

$$
r^{2}=\tan \theta \cdot \frac{1}{\cos ^{2} \theta}
$$

$$
(r \cos \theta)^{2}=\tan \theta
$$

$$
x^{2}=\frac{y}{x}
$$

$y=x^{3} \quad$ Choice 0 .
3. $r^{2}=\sec ^{2} \theta(\tan \theta+1)$
$r^{2}=\frac{1}{\cos ^{2} \theta}(\tan \theta+1)$

$$
(r \cos \theta)^{2}=\tan \theta+1
$$

$$
x^{2}=\frac{y}{x}+1
$$

Multiply all terms by $x$

$$
\begin{aligned}
& x^{3}=y+x \\
& y=x^{3}-x \quad \text { Choli } Y
\end{aligned}
$$

4. $r^{2}=\sec \theta \csc \theta$

$$
\begin{aligned}
& r^{2}=\frac{1}{\cos \theta} \cdot \frac{1}{\sin \theta} \\
& r \cos \theta r \sin \theta=1 \\
& x \cdot y=1 \\
& y=\frac{1}{x} \quad \text { Choice } D .
\end{aligned}
$$

5. $r^{3}=\sec ^{2} \theta \csc \theta$

$$
\begin{gathered}
r^{3}=\frac{1}{\cos ^{2} \theta} \frac{1}{\sin \theta} \\
r^{2} \cos ^{2} \theta r \sin \theta=1 \\
x^{2} y=1 \\
y=\frac{1}{x^{2}} \text { Choice } \epsilon .
\end{gathered}
$$

6. 

$$
\begin{gathered}
r=\frac{\sec \theta}{r \cos \theta-\tan \theta} \\
r=\frac{1}{\cos \theta} \cdot \frac{1}{(r \cos \theta-\tan \theta)} \\
r \cos \theta \cdot(r \cos \theta-\tan \theta)=1 \\
x \cdot\left(x-\frac{y}{x}\right)=1 \\
x^{2}-y=1 \\
x^{2}-1=y
\end{gathered}
$$

choice $Q$.
7. $r=\sec \theta-\csc \theta$

$$
r=\frac{1}{\cos \theta}-\frac{1}{\sin \theta}
$$

Multiply all terms by $r \cos \theta \sin \theta$

$$
\begin{aligned}
r \cdot(r \cos \theta \sin \theta) & =\frac{1}{\cos \theta}(r \cos \theta \sin \theta)-\frac{1}{\sin \theta}(r \cos \theta \sin \theta) \\
r \cos \theta r \sin \theta & =r \sin \theta-r \cos \theta \\
x y & =y-x \\
x y-y & =-x \\
y(x-1) & =-x \\
y & =\frac{-x}{x-1} \text { or } y=\frac{x}{1-x}
\end{aligned}
$$

8. $r=\frac{1}{\cos \theta+\sin \theta}$ choice $K$.

$$
\begin{aligned}
r(\cos \theta+\sin \theta) & =1 \\
r \cos \theta+r \sin \theta & =1 \Rightarrow y=1-x \\
x+y & =1 \Rightarrow \text { choice }
\end{aligned}
$$

9. 

$$
\begin{aligned}
& r=\frac{\csc \theta}{\cot \theta-r \cos \theta} \\
& r=\frac{1}{\sin \theta} \cdot \frac{1}{(\cot \theta-r \cos \theta)}
\end{aligned}
$$

$$
r \sin \theta \cdot(\cot \theta-r \cos \theta)=1
$$

$$
y \cdot\left(\frac{x}{y}-x\right)=1
$$

$$
x-x y=1
$$

$$
x-1=x y
$$

$$
\frac{x-1}{x}=y
$$

or $y=1-\frac{1}{x}$ choice $I$.

