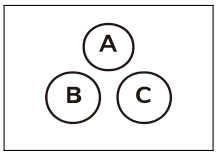
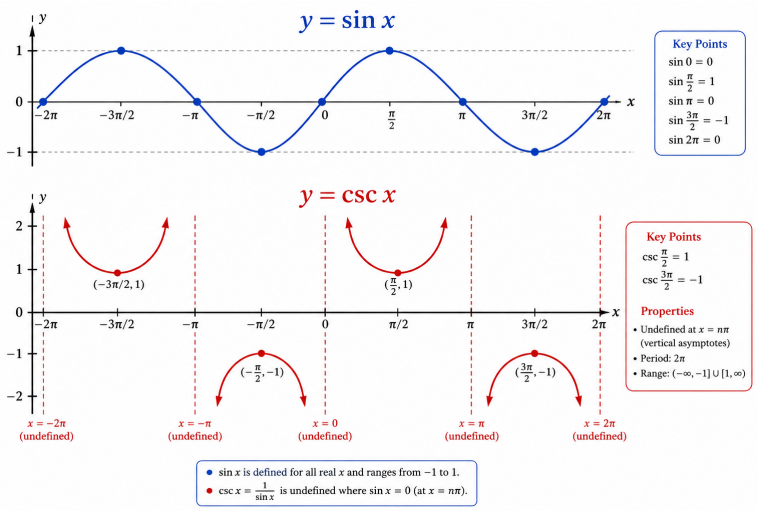
28 Formulas and Identities A
Reciprocal Identities





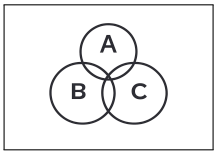
$csc(0) = r/0 = undefined \rightarrow sin(0) = 0/r = 0$

$csc(\pi/2) = r/1 = r \rightarrow sin(\pi/2) = 1/r = 1/r$

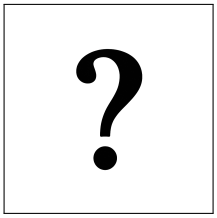
$csc(\pi) = r/0 = undefined \rightarrow sin(\pi) = 0/r = 0$

$csc(3\pi/2) = r/-1 = -r \rightarrow sin(3\pi/2) = -1/r = -1/r$

$csc(2\pi) = r/1 = undefined \rightarrow sin(2\pi) = 0/r = 0$

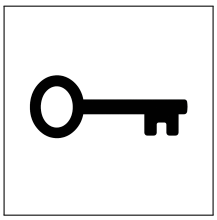


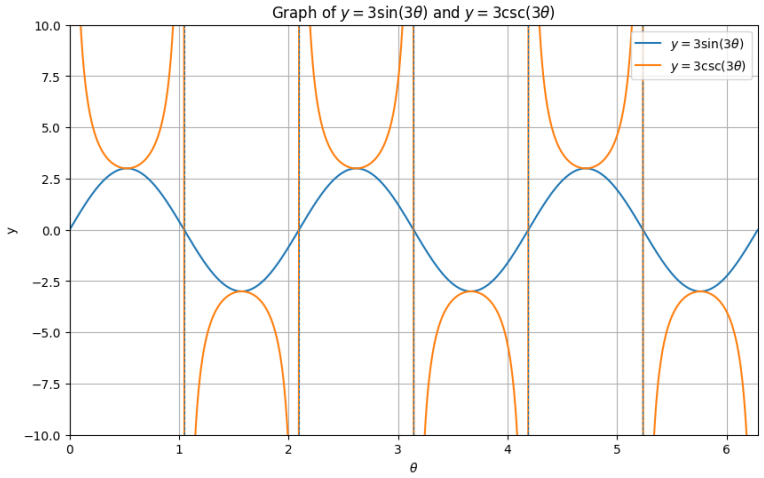
$csc(\theta) = r/y = 1/(y/r) = 1/sin(\theta)$



θ	$y = 3\csc(3\theta)$	$y = 3\sin(3\theta)$
0	?	?
$\pi/6$	?	?
$\pi/3$	?	?
$\pi/2$	?	?
$2\pi/3$	?	?
$5\pi/6$	?	?

28 Formulas and Identities A
Reciprocal Identities





$y = 3\csc(3\theta)$
$\theta = 0 \rightarrow 3\csc(3\theta) = 3\cot(0) = 3 \times r/0 = undefined$
$\theta = \pi/6 \rightarrow 3\csc(3\theta) = 3\csc(\pi/2) = 3 \times r/r = 3$
$\theta = \pi/3 \rightarrow 3\csc(3\theta) = 3\csc(\pi) = 3 \times r/0 = undefined$
$\theta = \pi/2 \rightarrow 3\csc(3\theta) = 3\csc(3\pi/2) = -3 \times r/r = -3$
$\theta = 2\pi/3 \rightarrow 3\csc(3\theta) = 3\csc(2\pi) = 3 \times r/0 = undefined$
$\theta = 5\pi/6 \rightarrow 3\csc(3\theta) = 3\csc(5\pi/2) = 3r/r$

$y = 3\sin(3\theta)$
$\theta = 0 \rightarrow 3\sin(3\theta) = 3\sin(0) = 3 \times 0/r = 0$
$\theta = \pi/6 \rightarrow 3\sin(3\theta) = 3\sin(\pi/2) = 3 \times r/r = 3$
$\theta = \pi/3 \rightarrow 3\sin(3\theta) = 3\sin(\pi) = 3 \times 0/r = 0$
$\theta = \pi/2 \rightarrow 3\sin(3\theta) = 3\sin(3\pi/2) = 3 \times (-r)/r = -3$
$\theta = 2\pi/3 \rightarrow 3\sin(3\theta) = 3\sin(2\pi) = 3 \times 0/r = 0$
$\theta = 5\pi/6 \rightarrow 3\sin(3\theta) = 3\sin(5\pi/2) = 3 \times r/r = 3$