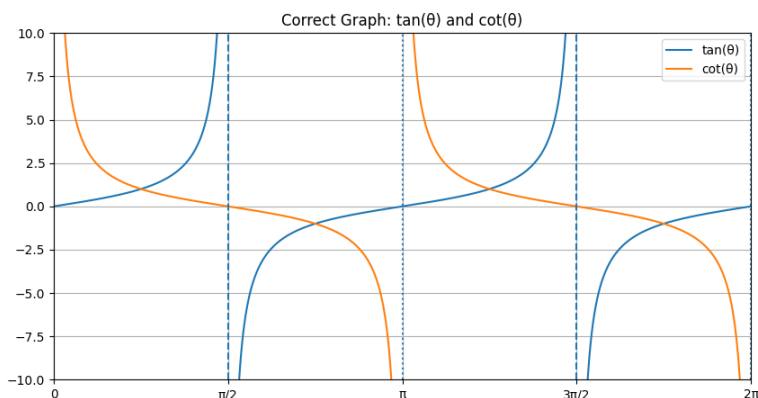
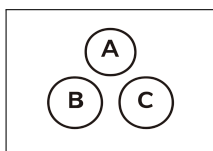


28 Formulas and Identities

Reciprocal Identities

C



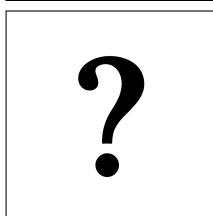
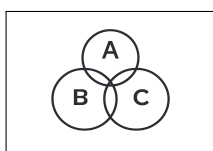
$$\cot(0) = r/0 = \text{undefined} \rightarrow \tan(0) = 0/r = 0$$

$$\cot(\pi/2) = 0/r = 0 \rightarrow \tan(\pi/2) = r/0 = \text{undefined}$$

$$\cot(\pi) = -r/0 = \text{undefined} \rightarrow \tan(\pi) = 0/(-r) = 0$$

$$\cot(3\pi/2) = 0/(-r) = 0 \rightarrow \tan(3\pi/2) = (-r)/0 = \text{undefined}$$

$$\cot(2\pi) = r/0 = \text{undefined} \rightarrow \tan(2\pi) = 0/r = 0$$



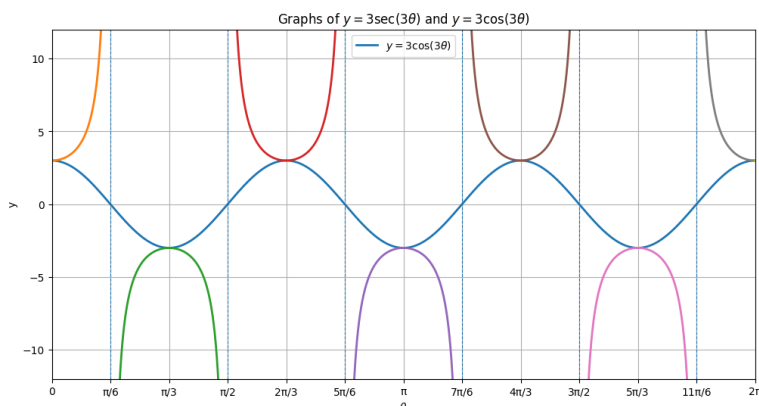
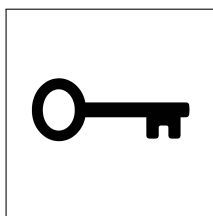
$$\cot(\theta) = x/y = 1/(y/x) = 1/\tan(\theta)$$

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

28 Formulas and Identities

Reciprocal Identities

C



$$y = 3 \cot(3\theta)$$

$$\theta = 0 \rightarrow 3 \cot(3\theta) = 3 \cot(0) = 3 \times r/0 = \text{undefined}$$

$$\theta = \pi/6 \rightarrow 3 \cot(3\theta) = 3 \cot(\pi/2) = 3 \times 0/r = 0$$

$$\theta = \pi/3 \rightarrow 3 \cot(3\theta) = 3 \cot(\pi) = -3 \times r/0 = \text{undefined}$$

$$\theta = \pi/2 \rightarrow 3 \cot(3\theta) = 3 \cot(3\pi/2) = 3 \times 0/(-r) = 0$$

$$\theta = 2\pi/3 \rightarrow 3 \cot(3\theta) = 3 \cot(2\pi) = 3 \times r/0 = \text{undefined}$$

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

$$y = 3 \tan(3\theta)$$

$$\theta = 0 \rightarrow 3 \tan(3\theta) = 3 \tan(0) = 3 \times 0/r = 0$$

$$\theta = \pi/6 \rightarrow 3 \tan(3\theta) = 3 \tan(\pi/2) = 3 \times r/0 = \text{undefined}$$

$$\theta = \pi/3 \rightarrow 3 \tan(3\theta) = 3 \tan(\pi) = 3 \times 0/r = 0$$

$$\theta = \pi/2 \rightarrow 3 \tan(3\theta) = 3 \tan(3\pi/2) = 3 \times r/0 = \text{undefined}$$

$$\theta = 2\pi/3 \rightarrow 3 \tan(3\theta) = 3 \tan(2\pi) = 3 \times 0/r = 0$$

$$\theta = 5\pi/6 \rightarrow 3 \tan(3\theta) = 3 \tan(5\pi/2) = 3 \times r/0 = \text{undefined}$$