

Exercise 5

Differentiate.

$$y = \sec \theta \tan \theta$$

Solution

Use the product rule to differentiate y .

$$\begin{aligned} y' &= \frac{dy}{d\theta} \\ &= \frac{d}{d\theta}(\sec \theta \tan \theta) \\ &= \left[\frac{d}{d\theta}(\sec \theta) \right] \tan \theta + \sec \theta \left[\frac{d}{d\theta}(\tan \theta) \right] \\ &= (\sec \theta \tan \theta) \tan \theta + \sec \theta (\sec^2 \theta) \\ &= \sec \theta \tan^2 \theta + \sec^3 \theta \end{aligned}$$