

**Exercise 9**

Differentiate.

$$y = \frac{x}{2 - \tan x}$$

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**Solution**Use the quotient rule to differentiate  $y$ .

$$\begin{aligned} y' &= \frac{dy}{dx} \\ &= \frac{d}{dx} \left( \frac{x}{2 - \tan x} \right) \\ &= \frac{\left[ \frac{d}{dx}(x) \right] (2 - \tan x) - \left[ \frac{d}{dx}(2 - \tan x) \right] (x)}{(2 - \tan x)^2} \\ &= \frac{(1)(2 - \tan x) - (-\sec^2 x)(x)}{(2 - \tan x)^2} \\ &= \frac{2 - \tan x + x \sec^2 x}{(2 - \tan x)^2} \end{aligned}$$