Find the dy/dx, if y=sinx/cosx

sec^2x

sec2x

cosecx

coshx

Solution:

We have if

$$y = \frac{\sin x}{\cos x} = \tan x$$

then

$$\frac{dy}{dx} = \frac{1}{(\cos x)^2}$$

Hence

$$\frac{dy}{dx} = \frac{1}{(\cos x)^2} = (\sec x)^2$$

because

$$\frac{1}{\cos x} = \sec x$$

Answer: $\frac{dy}{dx} = (\sec x)^2$