

Exercise 6

Calculate y' .

$$y = x \cos^{-1} x$$

Solution

Calculate y' by using the product rule.

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