

3C Differentiating Inverse Trig Functions

1. Show that $\frac{d}{dx}(\arcsin x) = \frac{1}{\sqrt{1-x^2}}$

2. $\frac{d}{dx}(\arccos x) = -\frac{1}{\sqrt{1-x^2}}$

3. Find $\frac{d}{dx}(\arctan x)$

4. Given $y = \arcsin x^2$, find $\frac{dy}{dx}$
a) Using implicit differentiation

b) Using the chain rule and the formula for $\frac{d}{dx}(\arcsin x)$

A Key point on the chain rule above: don't just multiply by the derivative! (as x does not remain x in the derivative)

5. Given $y = \arctan\left(\frac{1-x}{1+x}\right)$, find $\frac{dy}{dx}$

6. Show that

$$\sin(\arccos x) = \sqrt{1 - x^2}$$