

HW 13: Section 2.8

Due: Thursday, October 24th in SQRC by 9pm

Learning Goals:

- Compute the derivative of inverse trig functions.
 - Use implicit differentiation to compute a derivative.
1. In class we computed the derivative of $\sin^{-1}(x)$, $\tan^{-1}(x)$, and $\cos^{-1}(x)$. Find the formula for $\frac{d}{dx} \sec^{-1}(x)$. (Hint: the first step is to write $\sec(\sec^{-1}(x)) = x$ and take the derivative of both sides.)
 2. Problem 2.8.30 Compute the derivative of
 - a) $\cos^{-1}(x^2 + x)$
 - b) $\cos^{-1}(2/x)$
 3. Problem 2.8.32 Compute the derivative of
 - a) $\sqrt{2 + \tan^{-1}(x)}$
 - b) $e^{\tan^{-1}(x)}$
 4. Problem 2.8.34 Compute the derivative of
 - a) $\sin^{-1}(1/x)$
 - b) $\csc^{-1}(x)$
 5. Problem 2.8.2 Find the tangent line of

$$x^3y - 4\sqrt{x} = x^2y$$

at $(2, \sqrt{2})$.

6. Problem 2.8.6 Compute the derivative $y'(x)$ implicitly

$$3xy^3 - 4x = 10y^2$$