

Writing Assignment 4: arctan

Due Monday, February 15, 11:59 PM

This writing assignment has a few parts. Do all of them.

Part I

Let $\arctan(x)$ be the inverse⁵ function to $\tan(x)$.

Using the same process we used to calculate the derivatives of $\ln(x)$ and of $\arcsin(x)$, compute the derivative of $\arctan(x)$.

I am not looking just for your answer, I will be examining your *process* (otherwise known as “work” in some classes) closely.

Part II

Draw, or copy-paste, the graph of $\arctan(x)$. You can use outside sources or graphing calculators if you want.

Draw on this graph the tangent line at $x = 2$. It does not need to be exactly correct, I just need to know that you know how to (approximately) draw a tangent line by hand.

Part III

Do you know how to calculate $\arctan(x)$ without using a calculator?

Do you know how to calculate the slope of the tangent line you drew in Part II without a calculator? (You may make use of Part I if you want.)

⁵As with \arcsin , this is only an inverse to a certain point. $\arctan(\tan(x)) = x$ only when $-\pi/2 < x < \pi/2$.