Writing Assignment 4: arctan

Due Monday, September 21, 11:59 PM

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

Part I

Let arctan(x) be the inverse[5] 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.)

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