

Math 181 Honors Quiz 7 Version A

1. A square piece of tin 24 in on each side is to be made into an open-top box by cutting a small square from each corner and bending up the flaps to form the sides. How large a square should be cut from each corner to make the volume of the box as large as possible?

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2. Find the following derivatives:

(i)  $\frac{d}{dx} \left( \frac{x^2 - 1}{x^2 + 1} \right)$

(ii)  $\frac{d}{dx} \sin(x + \sin x)$

(iii)  $\frac{d}{dx} \arctan(x^2 \sin x)$

(iv)  $\frac{d^2}{dx^2} \sqrt{1 + x^2}$