1. Obtain the first three nonzero terms of the Taylor series centered at zero for the following functions. You are free to quote results from well known Taylor series in your answer.

$$\text{(a.) } f(x) = x \arctan x \ , \quad \text{(b.) } g(x) = \sin(x^4)$$

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2. Find the result of the indefinite integral, I, as a series.

$$I = \int \frac{\sin(x)}{x} \, dx$$

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