MATH 31 - Calculus. Homework 5. Due Th. 03/20/2025. Professor Luis Fernández

NAME:_____

Do not write your answers here.
Write your answers in other sheets and **STAPLE them to this one.**

1. Find the derivative of $(\sin x)^{\operatorname{Ln} x}$.

2. Find the derivative of $\operatorname{Ln}(\arctan(t^4))$.

3. Use a linear approximation (or differentials) to estimate the number $\sqrt{15}$.

4. The radius r of a cylinder is *increasing* at a rate of 1 cm/s. At the same time its height h is *decreasing* at a rate of 3 cm/s. At what rate is the volume increasing (or decreasing) when the radius is 10 cm and the height is 20 cm? [The volume of a cylinder is given by $V = \pi r^2 h$.]