

Directions: Answer all questions on a separate piece of paper. The point value of each question is indicated.

1. (2.5 points) Prove that $\frac{d}{dx}[\sec x] = \sec x \tan x$.
2. (2.5 points) Prove that $\frac{d}{dx}[\csc x] = -\csc x \cot x$.
3. (2.5 points) Prove that $\frac{d}{dx}[\tan x] = \sec^2 x$.
4. (2.5 points) Prove that $\frac{d}{dx}[\cot x] = -\csc^2 x$.