Please answer the following questions. Your answers will be evaluated on their correctness, completeness, and use of mathematical concepts we have covered. Please show all work and write out your work neatly. Answers without supporting work will receive no credit.

1. For the following equation find $y'(x)$ implicitly.

$$\frac{x + 3}{y} = 4x + y^2$$
2. Find the derivative of $f(x)$ where

$$f(x) = e^{\tan^{-1} x}.$$