3-5 DAY 2

1. Find $\frac{dy}{dx}$ for each of expression below by implicit differentiation.

   (a) $e^{xy} = x + y + 1$

   (b) $x = \sin y$

   (c) $x = \cos y$

   (d) $x = \tan y$

2. For each inverse trigonometric function below, sketch its graph and state its domain and range.

   (a) $y = \sin^{-1} x$

   (b) $y = \cos^{-1} x$

   (c) $y = \tan^{-1} x$

3. For your own reference, state the derivatives of $f(x) = \sin^{-1} x$, $f(x) = \cos^{-1} x$, and $f(x) = \tan^{-1} x$, in the space below:

4. Find the derivatives of each of the following functions.

   (a) $f(x) = \sin^{-1}(3x)$

   (b) $f(x) = (\cos^{-1} x)^2$

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

   (d) $f(x) = \arctan(\sqrt{4 - x^2})$

   (e) $f(x) = \frac{\arcsin\left(\frac{1}{x}\right)}{x}$