Math 2A Worksheet: 3.4/3.5 The Chain Rule & Implicit Differentiation

Write your names and Student ID numbers at the top of the page

1. Find $\frac{dy}{dx}$

   (a) $y = \left(x + \frac{1}{x}\right)^5$

   (b) $xe^y = x - y$

2. Use implicit differentiation to verify the following.

$$\frac{d}{dx}(\cos^{-1} x) = \frac{-1}{\sqrt{1-x^2}}$$

3. Find an equation of the tangent line to the curve $\sin(x+y) = 2x - 2y$ at the point (π, π).

4. If g is a twice differentiable function and $f(x) = xg(x^2)$ find $f''(x)$.

5. Find the derivative of $y = \tan^{-1}(x^2)$