

Calculus I TA Session (Summer Session)

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1. **(Differentiable of inverse function)** 1041 A1 Midterm Problem 3

Let $f(x)$ be a twice differentiable one-to-one function. Suppose that $f(2) = 1$, $f'(2) = 3$, $f''(2) = e$. Find the following value

$$\frac{d}{dx} f^{-1}(1) \quad \text{and} \quad \frac{d^2}{dx^2} f^{-1}(1)$$

2. **(Implicit differentiation)** 108 A1 Midterm Problem 3 (b)

Suppose function g has the following property

$$g(\sin 3x) = 2(g(x) + x)$$

for any real number x and g is differentiable at $x = 0$. Find $g(0)$ and $g'(0)$.