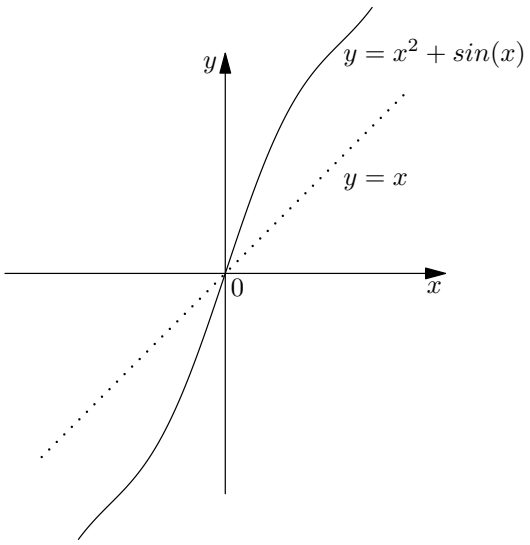
MATH141(0332/0342) Calculus II Fall 2009

Worksheet 4, Section 7.1-7.3 Name: _____

For Problem 1 through 3, let $f(x) = 2x + sin(x)$.

1. (*3 points*) Prove that $f(x)$ has an inverse in $\mathbf{R}$.

2. (*3 points*) The graph of $f(x)$ is provided below. Put on a sketch of the function $f^{-1}(x)$ on the same graph.



3. (*4 points*) Find the value of $(f^{-1})'(2\pi)$. (Hint: Have you noticed $f(\pi) = 2\pi$?)

4. (*6 points*) Find the following integrals.

$$(1) \int e^t e^{e^t} dt$$

$$(2) \int e^{x-e^x} dx$$

$$\int_1^2 10^x dx$$

5. (*4 points*) Find the derivative of the following functions.

$$(1)\ f(x) = (\ln x)^{\ln x}$$

$$(2)\ g(x) = x^{10/x}$$