Math 241: HW 7

Due on Monday, September 23

Fall '13

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Problem 1

Prove that $(\cos(x))' = -\sin(x)$.

Problem 2

Verify the following using product, quotient or chain rule.

$$(\cot(x))' = -\csc^2(x)$$
$$(\sec(x))' = \sec(x)\tan(x)$$
$$(\csc(x))' = -\cot(x)\csc(x)$$

Problem 3

Verify the quotient rule rewriting

$$\left(\frac{f(x)}{g(x)}\right)' = (f(x)(g(x))^{-1})'$$

and using the chain rule.

Problem 4

Compute the following:

$$((\sin(x)+x)^{100})' =$$

$$(x^2(\sin(x)+x^2)^{100})' =$$

$$(\sec(\sin(x)))' = \quad \text{hint: use problem 2}$$

$$\left(\frac{x^2(\sin(x)+x^2)^{100}}{\tan(\sec(\sin(x)))}\right)' =$$