Miscellaneous Midterm 2 − Review Problems

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Problem 1

Show that $f(x) = \ln(x) - x$ does **NOT** have a slant asymptote at ∞

Problem 2

Show that if f is an odd function, then for every b there is a c such that $f'(c) = \frac{f(b)}{b}$

Problem 3

Suppose a driver puts on the brakes and constantly deccelerates at $16\,ft/s^2$ until arriving at a complete stop 200 feet later. How fast was the car traveling when the brakes were first applied?

Problem 4

Find y', where $y = x^y$

Problem 5

Suppose two runnners start a race and finish in a tie. Show that at some time they were running at the same speed.

Problem 6

(if time permits) Find an approximate value of $\sin(\pi - 0.01)$

Problem 7

(if time permits) Tritium-3 decays to 94.5 percent of its original amount after 1 year. How long will it take for it to decay to 20 percent of its original amount?