Practice for Final Exam

MATH 125 — Calculus 1
Monday, April 29

Please print your name:

Besides the allowed calculator, no notes or tools of any kind will be permitted.

The final exam is cumulative. The problems below only cover the material since Midterm #3.

- Start by doing the practice problems for Midterm #1, #2 and #3, as well as the problems below.
- Then, retake all quizzes. (Versions with and without solutions are posted to our course website.)
- Finally, retake Midterm #1, #2 and #3.

Problem 1. Compute the following derivatives.

(a) $\frac{\mathrm{d}}{\mathrm{d}x}\int_{x^2}^{5}\sin(t^2+1)\mathrm{d}t$

(b) $\frac{\mathrm{d}}{\mathrm{d}x}\int_{\sqrt{x}}^{4\sqrt{x}}\sin(t^2+1)\mathrm{d}t$

(c) $\frac{\mathrm{d}}{\mathrm{d}x}\int_{3x^2}^{5x^2}\cos(\sin(t))\mathrm{d}t$

(d) $\frac{\mathrm{d}}{\mathrm{d}x}\int_{1/x}^{x}\cos(\sin(t))\mathrm{d}t$

Problem 2.

(a) Find the net area between the x-axis and $f(x)=x^3-4x$ for x in $[-1,3]$.

(b) Find the total area between the x-axis and $f(x)=x^3-4x$ for x in $[-1,3]$.

Problem 3. Let $f(x)=x^3-x^2-2x$.

(a) What are the minimum, maximum and average value of $f(x)$ for x in $[-1,3]$?

(b) What are the minimum, maximum and average value of $f(x)$ for x in $[-1,1]$?

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