

408L CLASS PROBLEMS

JANUARY 27, 2020

Problem 1. Find the derivative of $f(x) = \int_x^0 \sqrt{1 + \sec(t)} dt$.

Problem 2. Find the derivative of $f(x) = \int_1^{e^x} \log(t) dt$.

Problem 3. Find the derivative of $f(x) = \int_1^{\sqrt{x}} \frac{t^2}{t^4+1} dt$.

Problem 4. Find $\int_0^2 |2t - 1| dt$.

Problem 5. Find the anti-derivative of $f(x) = \cos^2 x$. (Hint: use trig identities to simplify.)

Problem 6. Find the average value of $\cos^2 x$ for x in $[-\pi/2, \pi/2]$.