

Show all your work. No credits for answers not supported by work.

Problem 1: (7 points) Find $f'(0)$ if $f(x) = \int_{3x}^{x^2} e^{-t^3} dt$

Problem 2: (18 points) Evaluate the integrals:

(a) $\int_{-\pi}^{\pi} \frac{\sin x^3}{1+x^2} dx$

(b) $\int \frac{2x-1}{(x-3)(x+2)} dx$

(c) $\int \frac{\tan x \sec x}{\cos x} dx$

Show all your work. No credits for answers not supported by work.

Problem 1: (7 points) Find $f'(x)$ if $f(x) = \int_{\sin x}^{x^2} \frac{t}{1-t^2} dt$

Problem 2: (18 points) Evaluate the integrals:

(a) $\int_{-e}^e \frac{x^3}{1+e^{-x^2}} dx$

(b) $\int \frac{x+1}{(x-1)(x+3)} dx$

(c) $\int \frac{\cot x \csc x}{\sin x} dx$