

MEMORIAL UNIVERSITY OF NEWFOUNDLAND  
DEPARTMENT OF MATHEMATICS AND STATISTICS

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ASSIGNMENT 1

MATHEMATICS 1001

FALL 2019

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**Due: Friday, September 20th, 2019 at 4:00pm. SHOW ALL WORK.**

**Note:** You are encouraged to complete the WebAssign problem set “Elementary Indefinite Integrals” before you work on this assignment.

1. Evaluate the following indefinite integrals.

(a)  $\int \left( 5x + \sqrt[4]{x} - \frac{7}{x^7} - \frac{6}{x} \right) dx$

(b)  $\int \csc(3x + 8) \cot(3x + 8) dx$

(c)  $\int [\sinh(4 - u) + \sec^2(u - 4)] du$

(d)  $\int [e^{7x+3} - 5^{7x+3}] dx$

(e)  $\int \frac{(5 - 2x)^9}{3} dx$

(f)  $\int \frac{3}{(5 - 2x)^9} dx$

(g)  $\int \frac{(5 - x^9)^2}{3} dx$

(h)  $\int \frac{e^x + e^{-x}}{e^{3x}} dx$

(i)  $\int \cos(t)[\tan(t) - 4\sec(t)] dt$

2. Suppose  $f(x)$  is a function for which

$$\int f(x) dx = \ln \left( \frac{2x - 3}{2x + 3} \right) + C.$$

Determine  $f(x)$ .

3. Suppose  $f(x)$  is a function for which

$$f(x) + C = \int \sin(x^2) dx.$$

Determine  $f'(x)$ .