

Name: _____

- There are 12 points possible on this proficiency, one point per problem. **No partial credit will be given.**
- You have 1 hour to complete this proficiency.
- No aids (book, calculator, etc.) are permitted.
- You do **not** need to simplify your expressions.
- Correct parenthesization is required.
- Do not put a “+C” where it does not belong and put a “+C” in the correct place at least one time.

1. [12 points] Compute the integrals of the following functions.

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

b. $\int_0^1 x^2 \sqrt{3x^3 + 1} dx$

c. $\int (\theta + \sin(7\theta)) d\theta$

d. $\int 5x^2 e^{x^3} dx$

e. $\int \frac{1}{1+9x^2} dx$

f. $\int (a + be^x + \sec^2(x)) dx$

g. $\int \frac{x}{5-3x^2} dx$

h. $\int e^x(1+e^x)^2 dx$

i. $\int \left(\frac{\sqrt{2}}{x} + \frac{3}{x^3} + \frac{\cos(x)}{3} \right) dx$

j. $\int x(2 + x^{1/3}) dx$

k. $\int 2x^3(1 + x^2)^5 dx$

l. $\int (\sec(t) \tan(t) + 1) dt$