

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 do put a “+C” in the correct place at least one time.

1. [12 points] Compute the following definite/indefinite integrals.

a. $\int \left(\frac{x}{3} + \frac{4}{x} + \frac{4}{3} \right) dx$

b. $\int \cos(2x) dx$

c. $\int_1^2 x(x+1) dx$

d. $\int \frac{1 + \sec^2(2x)}{2x + \tan(2x)} dx$

e. $\int \frac{5}{x(\ln x)^3} dx$

f. $\int (4x^3 + \sin(x) + e^x) dx$

g. $\int \frac{1}{\sqrt{1-x^2}} dx$

h. $\int \frac{x^3}{\sqrt{3-x^4}} dx$

i. $\int (e^{-x} + \sec(x) \tan(x)) dx$

j. $\int \frac{\tan^{-1}(x)}{1+x^2} dx$

k. $\int_0^2 2x(x^2 - 2)^3 dx$

l. $\int \frac{x}{x-1} dx$