

Name: \_\_\_\_\_

- There are 12 points possible on this proficiency: one point per problem with no partial credit.
- You have 30 minutes to complete this proficiency.
- No aids (book, calculator, etc.) are permitted.
- You do **not** need to simplify your expressions.
- For at least one problem you must indicate correct use of a constant of integration.
- Circle your final answer.

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

a.  $\int_1^4 \frac{x+1}{\sqrt{x}} dx$

b.  $\int_0^{1/2} (4 - \cos(\pi x)) dx$

c.  $\int (x+3)(2x+1) dx$

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

e.  $\int \frac{\cos(x) + 1}{\sin(x) + x} dx$

f.  $\int \frac{e^x}{(5 + e^x)^4} dx$

g.  $\int \sec(1 - 2x) \tan(1 - 2x) dx$

h.  $\int \frac{6}{1+x^2} dx$

i.  $\int x(x+1)^{10} dx$

j.  $\int \sqrt{2} \sec^2(x) dx$

k.  $\int \left( \frac{1}{x} + \frac{\ln(x)}{x} \right) dx$

l.  $\int \left( \sqrt[3]{x^5} + \sqrt[3]{4} \right) dx$