

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. $\int (4x^3 + \cos(x)) dx$

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

c. $\int_1^2 (xe^{x^2}) dx$

d. $\int \left(\frac{x}{2} + \frac{2}{x} + \frac{2}{3} \right) dx$

e. $\int \frac{1 - \sin(2x)}{2x + \cos(2x)} dx$

f. $\int \frac{5}{x(\ln x)^2} dx$

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

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

i. $\int (e^{-x} + \sec^2(x)) dx$

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

k. $\int_{-1}^1 x(3-x) dx$

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