Name: _____ _____ **/ 12**

- 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. $\displaystyle\int_0^1 \frac{3}{1+x^2}\,dx$

b. $\displaystyle\int e^{3x} - 8x^{\frac{1}{7}} + \sqrt{3}\,dx$

c. $\displaystyle\int \frac{x}{x^2-9}\,dx$

d. $\int (1+\sec(x))^4 \sec(x)\tan(x)\, dx$

e. $\int \frac{\cos(x)}{\sin^3(x)}\, dx$

f. $\int \frac{t^2-2}{\sqrt{t}}\, dt$

g. $\displaystyle\int \frac{(1+\ln(x))^2}{x}\,dx$

h. $\displaystyle\int w\sqrt{9-w}\,dw$

i. $\displaystyle\int \sin(4x-7)\,dx$

j. $\int e^{2t} \sin\left(e^{2t}\right)\, dt$

k. $\int \frac{1}{(8x-1)^{1/3}}\, dx$

l. $\int t^3 e^{t^4}\, dt$