Name: _____

- There are 12 points possible on this proficiency: one point per problem with no partial credit.
- You have 60 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. $\displaystyle\int_1^2 \frac{2+x^3}{x^2}\,dx$

b. $\displaystyle\int_0^{\pi} (6x+\sin\left(\frac{x}{2}\right))\,dx$

c. $\displaystyle\int 10x^2(x-5)\,dx$

d. $\int e^x \cos(1+e^x)\, dx$

e. $\int \frac{1}{x^5} + \frac{\sqrt{x}}{5}\, dx$

f. $\int \frac{e^{3x}}{\sqrt{5+e^{3x}}}\, dx$

g. $\displaystyle\int \frac{1}{x} + \sec(x)\tan(x)\,dx$

h. $\displaystyle\int \left(\frac{1}{\sqrt{1-x^2}} + \frac{1-x^2}{3}\right)\,dx$

i. $\displaystyle\int \frac{3x}{x^2+1}\,dx$

j. $\int x\sqrt{2-x}\,dx$

k. $\int \tan(x)\sec^2(x)\,dx$

l. $\int \frac{x+e^{-x}}{8}\,dx$