

Please show **all** your work! Answers without supporting work will not be given credit.
Write answers in spaces provided.

Name: _____

1. [5 pts] Compute $\int 5 \cot(8x) dx$

Solution:

$$\int 5 \cot(8x) dx = 5 \int \frac{\cos(8x)}{\sin(8x)} dx$$

$$\begin{array}{l} \frac{u=\sin(8x)}{du=8 \cos(8x) dx} \\ \frac{du}{8} = \cos(8x) dx \end{array} \quad 5 \int \frac{1}{u} \cdot \frac{du}{8} \quad [3 \text{ pts}]$$

$$= \frac{5}{8} \ln |u| + C \quad [1 \text{ pt}]$$

$$= \frac{5}{8} \ln |\sin(8x)| + C \quad [1 \text{ pt}]$$

2. [5 pts] Compute $\int \frac{4(\ln(5x))^3}{x} dx$.

Solution:

$$\int \frac{4(\ln(5x))^3}{x} dx \quad \frac{u=\ln(5x)}{du=\frac{1}{x} dx} \quad 4 \int u^3 du \quad [3 \text{ pt}]$$

$$= 4 \cdot \frac{1}{4} u^4 \quad [1 \text{ pt}]$$

$$= u^4$$

$$= (\ln(5x))^4 + C \quad [1 \text{ pt}]$$