

Name \_\_\_\_\_

- You have 15 minutes
- No calculators
- Show sufficient work

1. (2 points) Evaluate the integral  $\int \frac{x^3}{\sqrt[3]{x^4 + 2}} dx$ .

2. (3 points) Evaluate the integral  $\int_{\pi/12}^{\pi/8} 8 \sin^3(2x) \cos(2x) dx$  and simplify your answer.

3. (4 points) Consider the region from  $y = 1$  to  $y = 3$  between the  $y$ -axis and the graph of  $y = \frac{1}{2} \ln x$ . In the following manner set up, but do not evaluate, integrals which represent the area of this region.

(a) Integrate with respect to  $x$ .

(b) Integrate with respect to  $y$ . (the integrands in parts (a) and (b) should be different)

4. (1 point) Determine the area of the region in problem (3) by completing any necessary integration.