

Name _____

You have 20 minutes for this quiz – no calculators allowed.

1. (3 points) The area of the first quadrant region bounded by the x -axis, the y -axis, the line $y = 3$ and the graph of $y = \ln x$ can be determined through the use of definite integrals. Show how to do this by writing the appropriate definite integral (or integrals) to represent this area. You do not need to evaluate any integrals.

2. (3 points) Evaluate the definite integral.

$$\int_0^2 \frac{8x}{\sqrt{x^2 + 6}} dx$$

3. (2 points) Evaluate the indefinite integral. Hint: try the substitution $u = x^3 + 4$.

$$\int \frac{3x^8}{x^3 + 4} dx$$

4. (1 point each) Suppose that f is an odd function and g is an even function which are each integrable on the interval $[-3, 3]$. Given that $\int_0^3 f(x) dx = 4$ and $\int_0^3 g(x) dx = 5$, evaluate the following definite integrals.

(a) $\int_{-3}^3 (6f(x) + 8g(x)) dx$

(b) $\int_{-3}^3 (5 + 4(f(x))^7) dx$