

Name _____

- You have 20 minutes
- No calculators
- Show sufficient work

1. (2 points) Precisely state *The Mean Value Theorem*.

2. (2 points) Let \mathbf{R} be the finite region bounded by $y = 2 \ln x$, $y = 3 \ln x$ and $y = 6$. Determine the area of \mathbf{R} by evaluating a definite integral with respect to y .

3. (2 points) Evaluate the definite integral. Simplify your answer.

$$\int_{-2}^0 \frac{42x}{(x^2 + 3)^2} dx$$

4. (2 points each) Evaluate the indefinite integrals.

(a) $\int 45x^2 \tan^4(x^3) \sec^2(x^3) dx$

(b) $\int \frac{120x^4}{4x^{10} + 1} dx$