

Name _____

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

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

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

$$\int_{e^4}^{e^{25}} \frac{7}{x\sqrt{\ln x}} dx$$

3. (2 points each) Evaluate the indefinite integrals.

(a) $\int \frac{10x^3 + 16x}{x^2 + 1} dx$

(b) $\int 6x^5 (x^3 + 1)^{10} dx$

4. (2 points) Let \mathbf{R} be the finite region bounded by $x = y^2$, $x = (y - 6)^2$, and $x = 0$. In the following manner, set up but do not evaluate definite integrals which represent the area of the region \mathbf{R} .

(a) Integrate with respect to x .

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