

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.

$$\int_{e^4}^{e^9} \frac{6\sqrt{\ln x}}{x} dx$$

3. (2 points) Evaluate the indefinite integral.

$$\int 15x^4 \sin^2(x^5) \cos(x^5) dx$$

4. (2 points) Evaluate the indefinite integral.

$$\int e^{2x} (e^x + 3)^{10} dx$$

5. (2 points) Let \mathbf{R} be the finite region bounded by the given functions. In the following way, set up but do not evaluate definite integrals which represent the area of the region \mathbf{R} .

$$f(x) = -2x + 14$$

$$g(x) = \frac{20}{x}$$

- (a) Integrate with respect to x .

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