

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.

$$\int_0^{\pi/6} \tan^3(x) \sec^2(x) dx$$

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

(a) $\int \frac{6x^5}{x^3 + 1} dx$

(b) $\int \frac{\sqrt{x} + e^{\sqrt{x}}}{\sqrt{x}} dx$

4. (2 points) Let \mathbf{R} be the finite region bounded by $y = 5 \tan(x)$, $y = 5$, 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.)