

Name _____

- You have 15 minutes
- No calculators
- Show sufficient work

1. (2 points) Find the average value of the function $f(x) = \frac{x}{\sqrt{x^2 + 9}}$ on the interval $[1, 4]$.

2. (2 points) Let \mathbf{R} be the finite region bounded by $y = 9 - x^2$ and the x -axis. Set up, but do not evaluate, a definite integral which represents the volume of the solid obtained when \mathbf{R} is revolved around the vertical line $x = 5$.

3. (3 points each) Let \mathbf{R} be the finite region bounded by $y = e^{2x}$, $y = 3$ and the y -axis. In the following manner set up, but do not evaluate, definite integrals which represent the volume of the solid obtained when \mathbf{R} is revolved around the y -axis.

(a) Integrate with respect to x .

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