

Name _____

You have 15 minutes for this quiz – no calculators allowed.

1. (2 points) Precisely state *Rolle's Theorem*.

2. (2 points) Let $f(x) = 3x^2 + 2x + 5$. Determine the value of c which satisfies the conclusion of the *Mean Value Theorem* on the interval $[a, b]$ with $a < b$. You must show all work and simplify your answer.

3. (2 points each) Let \mathbf{R} be the region bounded by the x -axis and the graph of $y = 3 + 2 \sin x$ on the interval $[0, 2\pi]$. Set up, but do not evaluate, definite integrals which represent the given quantities. Use proper notation.

(a) The volume of the solid obtained when \mathbf{R} is revolved around the x -axis.

(b) The volume of the solid obtained when \mathbf{R} is revolved around the line $y = 7$.

(c) The volume of the solid with base \mathbf{R} for which the cross-sections perpendicular to the x -axis are semi-circles.