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30 minutes maximum. 25 possible points. No aids (book, calculator, etc.) are permitted Show all work and use proper notation for full credit. Answers should be in reasonably-simplified form.

For each problem below, you are strongly encouraged to sketch the region and draw a sample slice.

1. **[8 points]** Find the area of the region enclosed by $y = 5 - x^2$ and $y = 3 - x$.

2. [8 points] Find the volume of the solid obtained by rotating region determined by $y = e^{-x}$, $y = 0$, $x = -1$, and $x = 1$ about the x-axis.

3. [9 points points] Let R be the region bounded by $y = 2x^2$ and $y = x^3$, graphed below. **Set up** an integral to find the volume of the solid obtained if:
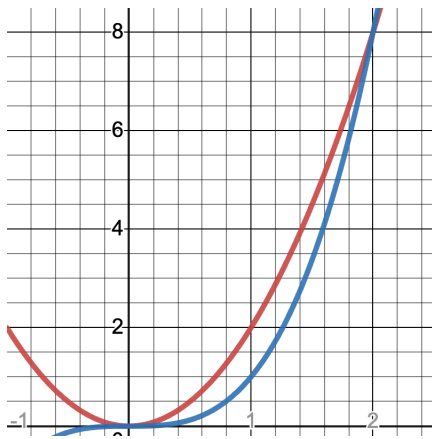
a. R rotated about the x-axis.

b. R rotated about the y-axis.

c. R is the base of a solid with cross-sections perpendicular to the base and parallel to the y-axis are squares.