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In problems 1-3, **use the indicated method** to find the volume generated by rotating the given region about the given line. For each problem, you must

a) sketch the generating region, showing a typical generating rectangle,
b) write an expression for the volume generated by this rectangle,
c) express the exact volume of the solid as a definite integral, and
d) evaluate the integral. Express your final answers rounded to 3 significant digits.

Show all of your work, including your answer, neatly organized on the graph paper provided.

1. The region bounded by the line $y = -5$ and the curve $y = x^2 - 9$ is rotated about the line $y = -5$. (Use disks.)

2. The region between the line $y = 3x$ and the curve $y = x^2$ is rotated about the line $x = -1$. (Use washers.)

3. The region between the line $y = 3x$ and the curve $y = x^2$ is rotated about the line $y = -2$. (Use shells.)

4. In this problem a solid is described. You must

a) sketch the base of the solid, showing a typical cross sectional slice,
b) write an expression for the volume of this cross sectional slice,
c) express the exact volume of the solid as a definite integral, and
d) evaluate the integral. Express your final answers rounded to 3 significant digits.

Show all of your work, including your answer, neatly organized.

The base of a solid is the circle $x^2 + y^2 = 25$. Each cross section by a plane perpendicular to the x-axis is an isosceles right triangle with one leg in the base of the solid.

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Use the specified technique to approximate the definite integral below.
In each case divide [-1, 2] into 6 subintervals. Show all of your work neatly organized.

$$\int_{-1}^{2} (x^4 + 1)dx$$

5. S_L = _____

6. S_R = _____

7. S_M = _____

8. S_T = _____

9. S_S = _____