7.3b Known Cross-Sections & Shells

sketch a cross section
Find the area formula
Find the limits of integration
Integrate A(x) to find the volume

$$V = \int_a^b A(x)dx$$

The base of a solid is the region between the x-axis and the curve $y = \sqrt{4 - x^2}$. Each cross-section perpendicular to the x-axis is a square. Find the volume of the solid.

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The base of a solid is the region between the x-axis and one arch of the curve $y = 2\sin(x)$. Each cross section cut perpendicular to the x--axis is a square whose edge runs from the x--axis to the curve. Find the volume.

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The base of a solid lies between $y = 2 + x\cos(x)$ and the x--axis fro
x =- -2 to x = 2. The cross sections perpendicular to the x--axis are isosceles right triangles with base on the xy plane. Find the volume.

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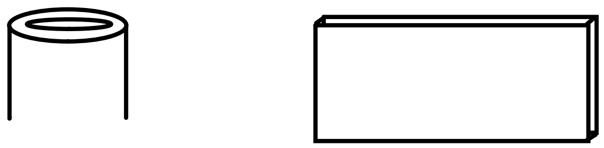
cylindrical shells- shells are like cylindrical tree rings



Revolve the region bounded by $y = 3x - x^2$ and the x--axis about the y--axis

notice the axis of rotation is perpendicular to the bounds of integration

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Revolve the region bounded by $y = 3x - x^2$ and the x--axis about the line x = -1

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Find the volume created by rotating the region bounded by

$y = x$ & $y = x^2$ a) about the y-axis

b) about the line x = -2

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The region bounded by the curves $y = 4 - x^2$, y=x and x=0 is revolved about the y-axis to form a solid. Use shells to find the volume of the solid.

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