

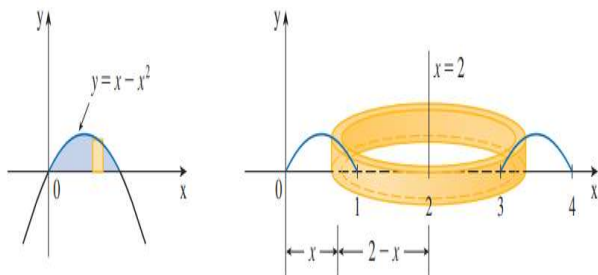
A 3D plot showing a cylinder of radius  $x$  and height  $2x^2 - x^3$ . The cylinder is centered on the  $x$ -axis, and the height is determined by the curve  $y = 2x^2 - x^3$ . The  $x$ -axis is labeled with  $x$  and  $2$ .

A graph of the function  $y = \sin(x^2)$  is shown. The curve starts at the origin  $(0,0)$ , rises to a peak, and then descends to the x-axis at  $x = \sqrt{\pi}$ . The area under the curve from  $x=0$  to  $x=\sqrt{\pi}$  is shaded in light orange.

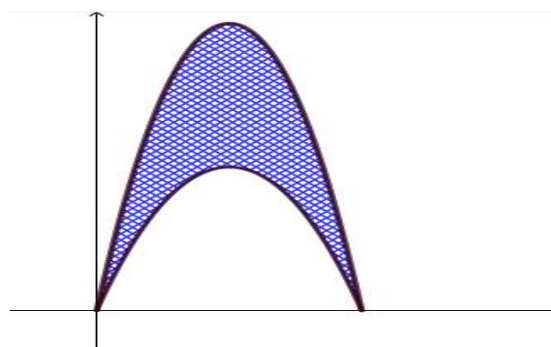
## Trimester 3

## 6-3 volume by cylindrical shells

**Question 3:** Let  $R$  be a region bounded by  $y = x - x^2$ ,  $y = 0$  and  $x = 0$  find the volume formed by revolving the region  $R$  about  $x = 2$



**Question 4:** Let  $R$  be a region bounded by  $y = 4x - x^2$ ,  $y = 8x - 2x^2$ ,  $y = 0$  and  $x = 0$ . Find the volume formed by revolving the region  $R$  about  $x = -1$



This image shows a full page of white paper with horizontal dashed lines, typical of primary-ruled notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

[illegible]

This image shows a full page of white paper with horizontal dashed lines, typical of primary school handwriting practice paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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### 6-3 volume by cylindrical shells

#### Multiple choice

**Question 1:** the volume of region  $R$  enclosed by

$$y = \ln x, y = 0, x = 2$$

About  $y$  axis can be represent as

- a)  $\pi \int_1^2 (\ln x)^2 dx$
- b)  $2\pi \int_1^{\ln 2} y(e)^{y^2} dy$
- c)  $2\pi \int_0^{\ln 2} y(e)^{2y} dy$
- d)  $2\pi \int_1^2 x \ln x dx$

**Question 2:** the given volume using cylindrical shells

$$2\pi \int_0^1 (2 - y)(1 - y^2) dy$$

The axis of rotation is

- a)  $x = 2$
- b)  $x = -2$
- c)  $y = 2$
- d)  $y = -2$

**Question 3:** the given volume using cylindrical shells

$$\pi \int_0^{\frac{\pi}{4}} (\pi + 2x)(\cos x - \sin x) dx$$

The axis of rotation is

- a)  $x = \pi$
- b)  $x = -\pi$
- c)  $x = \frac{\pi}{2}$
- d)  $x = \frac{-\pi}{2}$

**Question 4:** the given volume using cylindrical shells

$$2\pi \int_0^2 (4 - y)(y + y) dy$$

The height of the shell is

- a)  $y = x$
- b)  $y = -x$
- c)  $x = \sqrt{y}$
- d)  $x = |y|$