

33 Lecture - MTH101

Important Mcqs

A cylindrical tank is filled with water to a height of 10 meters. The radius of the tank is 5 meters. What is the approximate volume of the water in the tank?

- a. 785.4 m³
- b. 1570.8 m³
- c. 1963.5 m³
- d. 3141.6 m³

Answer: b. 1570.8 m³

What is the average value of the function $f(x) = 3x^2 + 2x + 1$ on the interval $[0,1]$?

- a. 2
- b. 3
- c. 4
- d. 5

Answer: c. 4

The region bounded by $y = x^2$ and $y = x$ is rotated around the y-axis. What is the volume of the resulting solid?

- a. 1/6?
- b. 1/4?
- c. 1/2?
- d. 3/4?

Answer: b. 1/4?

A rectangular tank with a length of 4 meters and a width of 2 meters is being filled with water at a rate of 2 cubic meters per minute. How fast is the water level rising when the depth of the water is 3 meters?

- a. $1/6$ m/min
- b. $1/3$ m/min
- c. $2/3$ m/min
- d. 1 m/min

Answer: c. $2/3$ m/min

The region bounded by $y = \sin x$, $y = 0$, $x = 0$, and $x = \pi$ is rotated around the x-axis. What is the volume of the resulting solid?

- a. 2π
- b. $2\pi^3/3$
- c. $4\pi^3/3$
- d. $8\pi^3/3$

Answer: b. $2\pi^3/3$

A wire of length 10 meters is bent into the shape of a rectangle. What is the maximum area of the rectangle?

- a. 5 m^2
- b. 10 m^2
- c. 12.5 m^2
- d. 25 m^2

Answer: c. 12.5 m^2

The region bounded by $y = x^3$, $y = 0$, $x = 1$, and $x = 2$ is rotated around the x-axis. What is the volume of the resulting solid?

- a. $7/3$?
- b. $8/3$?
- c. $9/2$?
- d. $10/3$?

Answer: b. $8/3$?

A rectangular tank with a length of 6 meters and a width of 4 meters is being filled with water at a rate of 3 cubic meters per minute. How fast is the water level rising when the depth of the water is 2 meters?

- a. $1/3$ m/min
- b. $1/2$ m/min
- c. $2/3$ m/min
- d. 1 m/min

Answer: d. 1 m/min

The region bounded by $y = x^2$, $y = 2x$, and $x = 2$ is rotated around the y-axis. What is the volume of the resulting solid?

- a. $8\pi/15$
- b. $4\pi/3$
- c. $8\pi/3$
- d. $16\pi/15$

Answer: a. $8\pi/15$

A particle moves along a straight line such that its position at time