## 33 Lecture - MTH101

## Important Mcqs

A cylindrical tank is filled with water to a height of 10 meters. The radius of the tank is $\mathbf{5}$ meters. What is the approximate volume of the water in the tank?
a. $785.4 \mathrm{~m}^{\wedge} 3$
b. $1570.8 \mathrm{~m}^{\wedge} 3$
c. $1963.5 \mathrm{~m}^{\wedge} 3$
d. $3141.6 \mathrm{~m}^{\wedge} 3$

Answer: b. 1570.8 m^3

What is the average value of the function $f(x)=3 x^{\wedge} 2+2 x+1$ on the interval $[0,1]$ ?
a. 2
b. 3
c. 4
d. 5

Answer: c. 4

The region bounded by $y=x^{\wedge} 2$ 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. $1 / 6 \mathrm{~m} / \mathrm{min}$
b. $1 / 3 \mathrm{~m} / \mathrm{min}$
c. $2 / 3 \mathrm{~m} / \mathrm{min}$
d. $1 \mathrm{~m} / \mathrm{min}$

Answer: c. $2 / 3 \mathrm{~m} / \mathrm{min}$

The region bounded by $y=\sin x, y=0, x=0$, and $x=$ ? is rotated around the $x$-axis. What is the volume of the resulting solid?
a. 2?
b. 2?/3
c. 4 ?/3
d. $8 ? / 3$

Answer: b. 2?/3

A wire of length 10 meters is bent into the shape of a rectangle. What is the maximum area of the rectangle?
a. $5 \mathrm{~m}^{\wedge} 2$
b. $10 \mathrm{~m}^{\wedge} 2$
c. $12.5 \mathrm{~m}^{\wedge} 2$
d. $25 \mathrm{~m}^{\wedge} 2$

Answer: c. $12.5 \mathrm{~m}^{\wedge} 2$

The region bounded by $y=x^{\wedge} 3, y=0, x=1$, 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. $1 / 3 \mathrm{~m} / \mathrm{min}$
b. $1 / 2 \mathrm{~m} / \mathrm{min}$
c. $2 / 3 \mathrm{~m} / \mathrm{min}$
d. $1 \mathrm{~m} / \mathrm{min}$

Answer: d. $1 \mathrm{~m} / \mathrm{min}$

The region bounded by $y=x^{\wedge} 2, y=2 x$, and $x=2$ is rotated around the $y$-axis. What is the volume of the resulting solid?
a. $8 ? / 15$
b. 4 ?/3
c. 8 ?/3
d. $16 ? / 15$

Answer: a. 8?/15
A particle moves along a straight line such that its position at time

