

Chapter 6 Class 12 - Application of Derivatives - MCQ Worksheet 2 by *teachoo*

Chapter: [Chapter 6 Class 12 - Application of Derivatives](#)

Name: _____

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1. Water is draining from a conical tank. The rate at which the water level h is dropping is related to the radius r of the water's surface. This is a classic example of:

- a) An optimization problem.
- b) A related rates problem.
- c) A problem about increasing functions.
- d) An absolute extrema problem.

2. A function $f(x)$ is increasing on the interval (a, b) . What can be said about its derivative, $f'(x)$?

- a) $f'(x) > 0$ for all x in (a, b) .

- b) $f'(x) < 0$ for all x in (a, b) .
- c) $f'(x) = 0$ for all x in (a, b) .
- d) $f'(x) > 0$ for all x in (a, b) .

3. The "point of diminishing returns" in economics, where adding more input starts to yield smaller increases in output, corresponds mathematically to:

- a) A local maximum.
- b) A critical point.
- c) A point of inflection.
- d) An endpoint.

4. If the second derivative test for a critical point c results in $f''(c) = 0$, what is the next step?

- a) Conclude that c is a point of inflection.
- b) Conclude that c is a local maximum.
- c) Use the first derivative test to analyze the sign change of $f'(x)$ around c .
- d) Conclude that the function has no local extrema.

5. The rate of change of a circle's circumference with respect to its radius is:

- a) A constant.
- b) Dependent on the circle's area.
- c) Proportional to the radius.

d) Zero.

6. A critical point of a function f is a point c where:

- a) The function has a local maximum or minimum.
- b) The function is equal to zero.
- c) The derivative $f'(c)$ is zero or is undefined.
- d) The second derivative $f''(c)$ is zero.

7. A company wants to design a cylindrical can with a fixed volume that uses the least amount of material. This means they need to:

- a) Maximize the volume.
- b) Minimize the surface area.
- c) Maximize the height of the can.
- d) Minimize the radius of the can.

8. If a function $f(x)$ is decreasing on $(0, 2)$ and increasing on $(2, 5)$, then at $x = 2$ the function has a:

- a) Local maximum.
- b) Point of inflection.
- c) Local minimum.
- d) Discontinuity.

9. The slope of the tangent line to the curve $y = x^2 - 3x$ at $x = 1$ represents:

- a) The average rate of change of the function.
- b) The maximum value of the function.
- c) The instantaneous rate of change of the function at $x = 1$.
- d) The point where the function crosses the x-axis.

10. Finding the shortest distance from a point to a curve is an application of:

- a) The first derivative test for increasing/decreasing intervals.
- b) Finding the absolute minimum of a distance function.
- c) The chain rule for related rates.
- d) Finding points of inflection.

Important links

- Answer of this worksheet - <https://www.teachoo.com/25581/5356/MCQ---Worksheet-2/category/Teachoo-Questions---MCQs/>
- Full Chapter with Explanation, Activity, Worksheets and more – <https://www.teachoo.com/subjects/cbse-maths/class-12th/ch6-12th-application-of-derivatives/>
- Maths Class 12 - <https://www.teachoo.com/subjects/cbse-maths/class-12th/>

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