



Class 12 Mathematics | Continuity And Differentiability

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. For $f(x) = (x^2 - 1)/(x - 1)$, $x \neq 1$, continuity at 1 requires $f(1) =$:

A. -1 B. 0 C. 2 D. 1

2. The function absolute value of x at 0 is:

A. Continuous but not differentiable
B. Neither
C. Both
D. Differentiable but not continuous

3. If a function is differentiable at a point, it is necessarily:

A. Constant nearby B. Positive there
C. Continuous there D. Increasing there

4. The derivative of e^{3x} is:

A. e^{3x} B. $3x e^{3x}$ C. $e^{3x}/3$ D. $3e^{3x}$

5. The derivative of $\ln x$ for $x > 0$ is:

A. $1/x$ B. x C. $-1/x$ D. $\ln x$

6. The derivative of $\sin^{-1} x$ for $-1 < x < 1$ is:

A. $1/\sqrt{1-x^2}$ B. $-1/(1+x^2)$
C. $-1/\sqrt{1-x^2}$ D. $1/(1+x^2)$

7. The derivative of $\tan^{-1}(2x)$ is:

A. $1/(1+4x^2)$ B. $2/(1+x^2)$
C. $1/(1+2x)$ D. $2/(1+4x^2)$

8. If $y = x^x$, $x > 0$, then dy/dx is:

A. x^x/x B. $x x^{x-1}$ C. $x^x \ln x$ D. $x^x(\ln x + 1)$

9. If $x^2 + y^2 = 25$, then dy/dx is:

A. $-x/y$ B. $-y/x$ C. x/y D. y/x

10. If $x = t^2$ and $y = t^3$, $t \neq 0$, dy/dx equals:

A. $2t$ B. $2/(3t)$ C. $3t/2$ D. $3t^2$

11. The second derivative of x^4 is:

A. $4x^3$ B. $12x^2$ C. $12x^3$ D. $24x$

12. If $f(x) = kx + 1$ for $x \leq 2$ and $f(x) = 5$ for $x > 2$, continuity at 2 gives $k =$:

A. 4 B. 3 C. 2 D. 1

13. The derivative of $\ln(\sin x)$, where defined, is:

A. $-\cot x$ B. $\tan x$ C. $\cot x$ D. $\sec x$

14. The derivative of $x e^x$ is:

A. $e^x(1-x)$ B. e^x C. $e^x(1+x)$ D. $x e^x$

15. The derivative of $\cos(x^2)$ is:

A. $2x \cos(x^2)$ B. $2x \sin(x^2)$
C. $-2x \sin(x^2)$ D. $-\sin(x^2)$

ANSWER KEY — check after completing all 15 questions

1.C 2.A 3.C 4.D 5.A 6.A 7.D 8.D 9.A 10.C 11.B 12.C 13.C 14.C 15.C

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper

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