ALBERTA MATH 31 · UNIT 2 · 10 QUESTIONS

Derivatives — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **If $f(x) = x\,e^x$, then $f'(x)$ is**

- **A** e^x
- **B** $x\,e^x$
- **C** $e^x\,(x + 1)$
- **D** $e^x\,(x - 1)$

Understand It with Pulse | Flag a mistake

2 **If $f(x) = \sin x$, then the value of $f'(\frac{\pi}{3})$, expressed as a decimal, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

3 **The graph of f', the derivative of f, is shown. The function f is decreasing on the interval**

- **A** (-2, 2)
- **B** (-∞, -2) and (2, ∞)
- **C** (2, ∞) only
- **D** never

Understand It with Pulse | Flag a mistake

4 $\frac{d}{dx}[\ln(x^2 + 1)]$ **is**

- **A** $\frac{1}{x^2 + 1}$
- **B** $\frac{x}{x^2 + 1}$
- **C** $\frac{2}{x}$
- **D** $\frac{2x}{x^2 + 1}$

Understand It with Pulse | Flag a mistake

5 For the relation $x^2 - y^2 = 9$, $\frac{dy}{dx}$ is

A $-\frac{x}{y}$

B $\frac{x}{y}$

C $\frac{y}{x}$

D $-\frac{y}{x}$

Understand It with Pulse | Flag a mistake

6 The graph of f' and the tangent line at P are shown. The value of f''(1) is _____

ANSWER _____

Understand It with Pulse | Flag a mistake

7 The value of $\lim_{h \to 0} \frac{\sqrt{9+h} - 3}{h}$ is

- **A** $\frac{1}{6}$
- **B** $\frac{1}{3}$
- **C** 3
- **D** $\frac{1}{2}$

Understand It with Pulse | Flag a mistake

8 $\frac{d}{dx}[\tan(2x)]$ is

- **A** $\sec^2(2x)$
- **B** $-\sec^2(2x)$
- **C** $2\tan(2x)$
- **D** $2\sec^2(2x)$

Understand It with Pulse | Flag a mistake

9 The graph of the velocity of an object is shown, with the tangent line at P. The acceleration of the object at t = 1 s, in m/s², is _____

ANSWER

Understand It with Pulse | Flag a mistake

10 If $f(x) = \frac{\ln x}{x}$, then f'(x) is

A $\frac{1 + \ln x}{x^2}$

B $\frac{1 - \ln x}{x^2}$

C $\frac{1}{x^2}$

D $\frac{\ln x}{x^2}$

Understand It with Pulse | Flag a mistake

ANSWER KEY

1.	C	**5.**	B	**9.**	-6
2.	0.5	**6.**	4	**10.**	B
3.	B	**7.**	A		
4.	D	**8.**	D		

© 2026 Brett Robbins. All Rights Reserved.