

3.5 Selecting Procedures for Determining Derivatives

Calculus

Name: _____

1. Let f be the function defined by $f(x) = 2x^4 - x^3 + x$. Let $g(x) = f^{-1}(x)$, where $g(2) = 1$. What is the value of $g'(2)$?

- (A) $\frac{1}{53}$ (B) $\frac{1}{26}$ (C) $\frac{1}{6}$ (D) $\frac{1}{2}$ (E) 53

2. If $f(x) = \sin^3(x)$, then $f'\left(\frac{\pi}{3}\right)$ is

- (A) $\frac{1}{8}$ (B) $\frac{3}{2}$ (C) $\frac{9}{4}$ (D) $\frac{3\sqrt{3}}{8}$ (E) $\frac{9}{8}$

3. The slope of the line tangent to the graph of $3x^2 + 5 \ln y = 12$ at $(2, 1)$ is

- (A) $-\frac{12}{5}$ (B) $\frac{12}{5}$ (C) $\frac{5}{12}$ (D) 12 (E) -7

4. If $f(x) = \frac{\sin \sqrt{x}}{\sqrt{x}}$, then $f'(x)$ is

- (A) $\frac{\cos \sqrt{x}}{2x} - \frac{\sin \sqrt{x}}{2\sqrt{x^3}}$ (B) $\frac{\cos \sqrt{x} - \sin \sqrt{x}}{2x}$ (C) $\frac{\sqrt{x} \cos \sqrt{x} - \frac{\sin \sqrt{x}}{2\sqrt{x}}}{x}$
(D) $\cos \sqrt{x}$ (E) $\frac{\frac{\cos \sqrt{x}}{2} + \frac{\sin \sqrt{x}}{2\sqrt{x}}}{x}$

5. If $f(x) = \sin^{-1} x$, then $f'\left(-\frac{\sqrt{3}}{2}\right) =$

- (A) $\frac{2\pi}{3}$ (B) $\frac{5\pi}{6}$ (C) $\frac{4}{7}$ (D) 2