

EMCF 10

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1. Give the slope of the tangent line to the graph of $f(x) = 2 \cos(3x)$ at the point where $x = \pi/6$.
 - a. 6
 - b. -6
 - c. 0
 - d. 2
 - e. -2
 - f. None of these.
2. Give the slope of the tangent line to the graph of $f(x) = \frac{\sin(x)}{\cos(x)+1}$ at the point where $x = 0$.
 - a. 1
 - b. -1
 - c. 2
 - d. -2
 - e. 0
 - f. None of these.
3. Let $f(x) = \frac{1}{\pi} x \tan(\pi x)$. Find $f'(1)$.
 - a. -2
 - b. 2
 - c. -1
 - d. 1
 - e. 0
 - f. None of these.
4. Let $f(x) = 3(x^2 + 1)^4$. Give $f'(1)$.
 - a. 192
 - b. 96
 - c. 48
 - d. 12
 - e. 156
 - f. None of these.

5. Let $f(x) = x \sin(\pi x)$. Give $f'''(1)$.
- π
 - $-\pi$
 - 3
 - 3
 - 0
 - None of these.
6. Give the derivative of $f(x) = \frac{\cos(x)+x}{\sin(x)}$ at $x = \pi/2$.
- 1
 - 1
 - 2
 - 2
 - 0
 - None of these.
7. Give $\frac{d^3}{dx^3}(\cos(x)+\sin(x))$.
- $\cos(x) - \sin(x)$
 - $-\cos(x) + \sin(x)$
 - $\cos(x) + \sin(x)$
 - $-\cos(x) - \sin(x)$
 - 0
 - None of these.
8. Let $f(x) = x \cos(x) + \sin(x)$. Give $f'(x)$.
- $x \sin(x) - \cos(x)$
 - $x \sin(x) + \cos(x)$
 - $-x \sin(x) - 2 \cos(x)$
 - $-x \sin(x) + 2 \cos(x)$
 - None of these.

9. Give $\frac{d^3}{dx^3}(3x^3 - 2x + 6)$.

- a. 0
- b. 18
- c. $9x$
- d. $6x$
- e. $9x^2 - 2$
- f. None of these.

10. Let $f(x) = \sin(2x)$. Give the value of $\lim_{h \rightarrow 0} \frac{f(h) - f(0)}{h}$.

- a. -1
- b. 1
- c. 2
- d. -2
- e. 0
- f. None of these.