Name _____

AB Multiple Choice No Calculator

Chpt. 4 Thru Max/min

(1) 16. The function defined by $f(x) = x^3 - 3x^2$ for all real numbers x has a relative maximum at $x =$

'85 (A) -2 (B) 0 (C) 1 (D) 2 (E) 4

(2) 25. $\frac{d}{dx}(2^x) =$

'93 (A) 2^{x-1} (B) $(2^{x-1})\,x$ (C) $(2^x)\ln 2$ (D) $(2^{x-1})\ln 2$ (E) $\frac{2x}{\ln 2}$

(3) 19. Let f be the function defined by $f(x) = \begin{cases} x^3 & \text{for } x \le 0, \\ x & \text{for } x > 0. \end{cases}$ Which of the following statements about f is true?

'93

(A) f is an odd function.
(B) f is discontinuous at $x = 0$.
(C) f has a relative maximum.
(D) $f'(0) = 0$
(E) $f'(x) > 0$ for $x \neq 0$.

(4) 29. Let $f(x) = \left|\sin(x) - \frac{1}{2}\right|$. The maximum value attained by f is

'73 (A) $\frac{1}{2}$ (B) 1 (C) $\frac{3}{2}$ (D) $\frac{\pi}{2}$ (E) $\frac{3\pi}{2}$

(5) 6. If $y = \frac{\ln x}{x}$, then $\frac{dy}{dx} =$

1988 (A) $\frac{1}{x}$ (B) $\frac{1}{x^2}$ (C) $\frac{\ln x - 1}{x^2}$ (D) $\frac{1 - \ln x}{x^2}$ (E) $\frac{1 + \ln x}{x^2}$

(6) 44. What is the minimum value of $f(x) = x \ln x$?

'93 (A) $-e$

(B) -1

(C) $-\frac{1}{e}$

(D) 0

(E) $f(x)$ has no minimum value.

(7) 23. $\frac{d}{dx}\left(\frac{1}{x^3} - \frac{1}{x} + x^2\right)$ at $x = -1$ is

1985 (A) -6 (B) -4 (C) 0 (D) 2 (E) 6