

Miscellaneous 1997 Multiple Choice Questions – AP Calculus AB Exam

Name: _____

Date: _____

Period: _____

6. $\frac{1}{2} \int e^{\frac{t}{2}} dt =$

- (A) $e^{-t} + C$ (B) $e^{-\frac{t}{2}} + C$ (C) $e^{\frac{t}{2}} + C$ (D) $2e^{\frac{t}{2}} + C$ (E) $e^t + C$

18. $\int_0^{\frac{\pi}{4}} \frac{e^{\tan x}}{\cos^2 x} dx$ is

- (A) 0 (B) 1 (C) $e-1$ (D) e (E) $e+1$

19. If $f(x) = \ln|x^2 - 1|$, then $f'(x) =$

- (A) $\left| \frac{2x}{x^2 - 1} \right|$ (D) $\frac{2x}{x^2 - 1}$
 (B) $\frac{2x}{|x^2 - 1|}$ (E) $\frac{1}{x^2 - 1}$
 (C) $\frac{2|x|}{x^2 - 1}$

20. The average value of $\cos x$ on the interval $[-3, 5]$ is

- (A) $\frac{\sin 5 - \sin 3}{8}$ (D) $\frac{\sin 3 + \sin 5}{2}$
 (B) $\frac{\sin 5 - \sin 3}{2}$ (E) $\frac{\sin 3 + \sin 5}{8}$
 (C) $\frac{\sin 3 - \sin 5}{2}$

22. What are all values of x for which the function f defined by $f(x) = (x^2 - 3)e^{-x}$ is increasing?

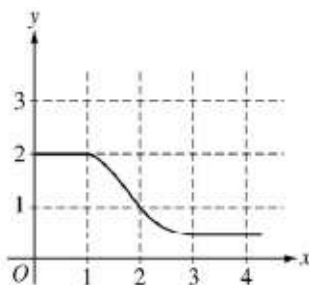
- (A) There are no such values of x .
 (B) $x < -1$ and $x > 3$
 (C) $-3 < x < 1$
 (D) $-1 < x < 3$
 (E) All values of x

40 Minutes—Graphing Calculator Required

- Notes: (1) The exact numerical value of the correct answer does not always appear among the choices given. When this happens, select from among the choices the number that best approximates the exact numerical value.
- (2) Unless otherwise specified, the domain of a function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number.

76. If $f(x) = \frac{e^{2x}}{2x}$, then $f'(x) =$

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



78. The graph of f is shown in the figure above. If $\int_1^3 f(x) dx = 2.3$ and $F'(x) = f(x)$, then $F(3) - F(0) =$
- (A) 0.3 (B) 1.3 (C) 3.3 (D) 4.3 (E) 5.3

80. Let f be the function given by $f(x) = 2e^{4x^2}$. For what value of x is the slope of the line tangent to the graph of f at $(x, f(x))$ equal to 3?
- (A) 0.168 (B) 0.276 (C) 0.318 (D) 0.342 (E) 0.551

85. If the derivative of f is given by $f'(x) = e^x - 3x^2$, at which of the following values of x does f have a relative maximum value?
- (A) -0.46 (B) 0.20 (C) 0.91 (D) 0.95 (E) 3.73