Unit 5 MC Practice:

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1) Inactive $\dfrac{1}{2}\int e^{\frac{t}{2}}\,dt =$

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

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2) Inactive $\displaystyle\int_0^{\frac{\pi}{4}} \dfrac{e^{\tan x}}{\cos^2 x}\,dx$ is

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

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3) Active If $f(x)=\dfrac{e^{2x}}{2x}$, then $f'(x)=$

(A) 1

(B) $\dfrac{e^{2x}(1-2x)}{2x^2}$

(C) e^{2x}

(D) $\dfrac{e^{2x}(2x+1)}{x^2}$

(E) $\dfrac{e^{2x}(2x-1)}{2x^2}$

4) Inactive If $f(x)=\sin\left(e^{-x}\right)$, then $f'(x)=$

(A) $-\cos(e^{-x})$

(B) $\cos(e^{-x})+e^{-x}$

(C) $\cos(e^{-x})-e^{-x}$

(D) $e^{-x}\cos(e^{-x})$

(E) $-e^{-x}\cos(e^{-x})$

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5) Inactive $\displaystyle\int_1^e \left(\dfrac{x^2-1}{x}\right)\,dx =$

(A) $e-\dfrac{1}{e}$ (B) e^2-e (C) $\dfrac{e^2}{2}-e+\dfrac{1}{2}$ (D) e^2-2 (E) $\dfrac{e^2}{2}-\dfrac{3}{2}$

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6) Inactive $\displaystyle\int_0^1 e^{-4x}\,dx =$

(A) $\dfrac{-e^{-4}}{4}$ (B) $-4e^{-4}$ (C) $e^{-4}-1$ (D) $\dfrac{1}{4}-\dfrac{e^{-4}}{4}$ (E) $4-4e^{-4}$

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7) Inactive If $f(x)=\ln\left(x+4+e^{-3x}\right)$, then $f'(0)$ is

(A) $-\dfrac{2}{5}$ (B) $\dfrac{1}{5}$ (C) $\dfrac{1}{4}$ (D) $\dfrac{2}{5}$ (E) nonexistent

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8) Active The velocity, in ft/sec, of a particle moving along the x-axis is given by the function $v(t) = e^t + te^t$. What is the average velocity of the particle from time $t = 0$ to time $t = 3$?

(A) 20.086 ft/sec

(B) 26.447 ft/sec

(C) 32.809 ft/sec

(D) 40.671 ft/sec

(E) 79.342 ft/sec

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9) Inactive What is the average value of $y = x^2\sqrt{x^3+1}$ on the interval $[0,2]$?

(A) $\dfrac{26}{9}$ (B) $\dfrac{52}{9}$ (C) $\dfrac{26}{3}$ (D) $\dfrac{52}{3}$ (E) 24

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