CHOOSE THE BEST ANSWER:

1) A function is given. Choose the alternative that is the derivative, $\dfrac{dy}{dx}$ of the function.

$y = \ln\left(x\sqrt{x^2+1}\right)$

a) $1 + \dfrac{x}{x^2+1}$

b) $\dfrac{1}{x\sqrt{x^2+1}}$

c) $\dfrac{2x^2+1}{x\sqrt{x^2+1}}$

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

e) None of the above

2) A function is given. Choose the alternative that is the derivative, $\dfrac{dy}{dx}$ of the function.

$y = x^2 \sin\dfrac{1}{x} \qquad (x \neq 0)$

a) $2x\sin\dfrac{1}{x} - x^2\cos\dfrac{1}{x}$

b) $-\dfrac{2}{x}\cos\dfrac{1}{x}$

c) $2x\cos\dfrac{1}{x}$

d) $2x\sin\dfrac{1}{x} - \cos\dfrac{1}{x}$

e) None of the above

3) A function is given. Choose the alternative that is the derivative, $\dfrac{dy}{dx}$ of the function.

$y = \dfrac{1}{2\sin 2x}$

a) $-\csc 2x\cot 2x$

b) $\dfrac{1}{4\cos 2x}$

c) $-4\csc 2x\cot 2x$

d) None of the above

e) $-\csc^2 2x$

4) A function is given. Choose the alternative that is the derivative, $\dfrac{dy}{dx}$ of the function

$y = e^{-x}\cos 2x$

a) $-e^{-x}\left(\cos 2x = 2\sin 2x\right)$

b) $e^{-x}\left(\sin 2x - \cos 2x\right)$

c) $2e^{-x}\sin 2x$

d) $-e^{-x}\left(\cos 2x + \sin 2x\right)$

e) None of the above