CHOOSE THE BEST ANSWER:

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

$$y = \ln\frac{e^x}{e^x - 1}$$

a) $x - \dfrac{e^x}{e^x - 1}$

b) $\dfrac{1}{e^x - 1}$

c) $-\dfrac{1}{e^x - 1}$

d) 0

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

f) None of the above

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

$$y = \tan^{-1}\frac{x}{2}$$

a) $\dfrac{4}{4 + x^2}$

b) $\dfrac{1}{\sqrt{4 - x^2}}$

c) $\dfrac{2}{\sqrt{4 - x^2}}$

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

e) $\dfrac{2}{x^2 + 4}$

f) None of the above

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

$$y = \ln(\sec x + \tan x)$$

a) $\sec x$

b) $\dfrac{1}{\sec x}$

c) $\tan x + \dfrac{\sec^2 x}{\tan x}$

d) $\dfrac{1}{\sec x + \tan x}$

e) $-\dfrac{1}{\sec x + \tan x}$

f) None of the above

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

$$y = \frac{e^x - e^{-x}}{e^x + e^{-x}}$$

a) 0

b) 1

c) $\dfrac{2}{\left(e^x + e^{-x}\right)^2}$

d) $\dfrac{4}{\left(e^x + e^{-x}\right)^2}$

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

f) None of the above