EE1002 Principles of Electronic Engineering Tutorial 2

1.

(a) Find the derivative of $y = 3x^2 + 2$ using first principles (i.e., find the ratio of $\Delta y/\Delta x$ and then take the limit $\Delta x \to 0$). Find the value of derivative at $x = 3$.
What is the physical meaning of derivative?

(b) Find the derivatives of the following functions:

(i) $y = \tan(x^2 + 1)$

(ii) $y = 1/\cos^2(2x^2 - 1)$

(iii) $y = \ln(e^x + \cos x)$

2. A function is given by $y = e^{-t} + e^{t}$. when

a) Find the derivative of y at $t = 5$.

b) Find the coordinates at which the derivative is zero.

3. A function is given by $y(x) = \sin(\cos(x))$

(a) Find the derivative of $y(x)$.

(b) By using (a), find the derivative of $g(x) = e^x \sin(\cos(x))$