1) Evaluate the following integral

$$\int \frac{xdx}{x^2 + 2x + 2} \tag{1}$$

hint: When the integral has an irreducible term, it is a good idea to use complete square method and appropriate trigonometric functions in order to find the solution.

2) Evaluate the following integral.

$$\int \frac{dx}{x} \frac{1}{(\ln(x)^2 + 5\ln(x) + 4} \tag{2}$$

3) Evaluate the following limit by using squeeze theorem

$$\lim_{x \to \infty} e^{-x} \sin^2(x) \tag{3}$$

Hint : The solution is zero. What I need is to see how you apply that theorem in order to find the answer.