

Calculus(II) Quiz8(05/21)

1.

Differentiate the function.

$$F(t) = e^{t \sin 2t}$$

[Solution]

By (9), $F(t) = e^{t \sin 2t} \Rightarrow$

$$F'(t) = e^{t \sin 2t} (t \sin 2t)' = e^{t \sin 2t} (t \cdot 2 \cos 2t + \sin 2t \cdot 1) = e^{t \sin 2t} (2t \cos 2t + \sin 2t)$$

2.

Evaluate the integral.

$$\int (e^x + e^{-x})^2 dx$$

[Solution]

$$\int (e^x + e^{-x})^2 dx = \int (e^{2x} + 2 + e^{-2x}) dx = \frac{1}{2}e^{2x} + 2x - \frac{1}{2}e^{-2x} + C$$