

Q) The number of real roots of the equation $e^{4x} - e^{3x} - 4e^{2x} - e^x + 1 = 0$ is equal to _____.

Correct Answer is **2**

Explanation

$$t^4 - t^3 - 4t^2 - t + 1 = 0, e^x = t > 0$$

$$\Rightarrow t^2 - t - 4 - 1/t + 1/t^2 = 0$$

$$\Rightarrow a^2 - a - 6 = 0, a = t + 1/t \geq 2$$

$$\Rightarrow a = 3, -2 \text{ (reject)}$$

$$\Rightarrow t + 1/t = 3$$

\Rightarrow The number of real roots = 2