Cambridge International AS & A Level

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Mathematics 9709/32

Paper 3 Pure Mathematics 3 **October/November 2020**

Question No (1)

1 Solve the equation

$$\ln(1 + e^{-3x}) = 2.$$

Give the answer correct to 3 decimal places.

Solution:

$$\ln(1 + e^{-3x}) = 2$$

$$taking \ln \ power \ of \ e \ on \ both \ sides.$$

$$e^{\ln(1+e^{-3x})} = e^2$$

$$1 + e^{-3x} = e^2$$

$$e^{-3x} = e^2 - 1$$

$$taking \ ln \ on \ both \ sides$$

$$\ln(e^{-3x}) = \ln(e^2 - 1)$$

$$-3x = \ln(6.38905)$$

$$x = \frac{-1.8546}{3}$$

$$x = -0.618$$