Logarithm and Exponential Functions – 2021 A2

1. June/2021/Paper_9709/22/No.1

(a) Solve the equation $\ln(2+x) - \ln x = 2\ln 3$. [3]

(b) Hence solve the equation $\ln(2+\cot y) - \ln(\cot y) = 2\ln 3$ for $0 < y < \frac{1}{2}\pi$. Give your answer correct to 4 significant figures. [2]

2. March/2021/Paper_9709/22/No.5a

(a) Given that $2\ln(x+1) + \ln x = \ln(x+9)$, show that $x = \sqrt{\dfrac{9}{x+2}}$. [3]