1.

   Solve the equation $2^{3x-1} = 5(3^{-x})$. Give your answer in the form $\dfrac{\ln a}{\ln b}$, where a and b are integers.

   [4]

Solve the equation $2^{3x-1} = 5(3^{1-x})$. Give your answer in the form $\dfrac{\ln a}{\ln b}$ where a and b are integers.

[4]

Find the exact value of $\displaystyle\int_0^{\frac{1}{4}\pi} x\sec^2 x\,dx$. [5]