

- c. Hence, or otherwise, solve the equation, (3)

$$5 + \ln\sqrt{x} = \ln(e+2^x)$$

- b. The value of k correct to 4 decimal places. (2)

[illegible]

Solutions

1a.

$\ln x^{\frac{1}{2}} = \frac{1}{2} \ln x$	M1
$= \frac{1}{2} t$	M1

1b.

$\ln e^2 + \ln x$	M1
$= 2 + t$	M1

1c.

$5 + \frac{1}{2}t = 2 + t$	M1
$t = \ln x = 6$	M1
$x = e^6$	M1

2a.

When $t = 0$, $v = 13$ $13 = c - 2$	M1
$c = 15$	M1

2b.

$7 = 15e^{-5.1k} - 2$ $e^{-5.1k} = \frac{3}{5}$	M1
$k = \frac{\ln(\frac{3}{5})}{-5.1} = 0.1002$	M1

