

Solve the equation

$$2\log_2(x) - \log_2(5) = 1$$

Solve the equation

$$\log_3(x) + \log_3(4) = 2$$

a Solve the equation

$$\log_3(x + 1) - \log_3(x - 2) = 1. \quad (3)$$

b Find, in terms of logarithms to the base 10, the exact value of x such that

$$3^{2x+1} = 2^{x-4}. \quad (3)$$

Express as a single logarithm to base a

$$2\log_a(x + 1) - \log_a(4)$$

Giving your answers to 2 decimal places, solve the simultaneous equations

$$e^{2y} = x + 1$$

$$\ln(x - 2) = 2y - 1$$

Solve the equation

$$\ln(2x + 5) = 1$$

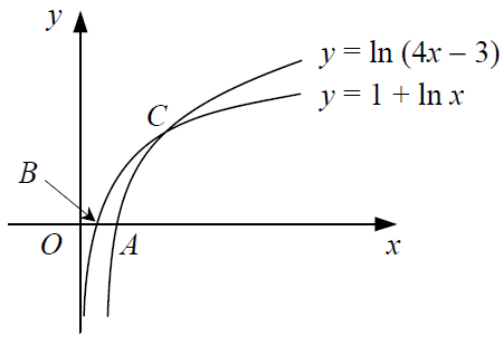
Solve the equation, giving your answers in exact form.

$$2e^y + 15e^{-y} = 11$$

Solve each equation, giving your answers correct to 2 decimal places.

a $e^{2x} - 5.7e^{-x} = 0$

b $\ln x - \ln(x - 1) = \frac{1}{2}$



The diagram shows the curves $y = \ln(4x - 3)$ and $y = 1 + \ln x$ which cross the x -axis at the points A and B respectively.

a Find the coordinates of A and B . **(4)**

The two curves intersect at the point C .

b Find the exact x -coordinate of C , giving your answer in terms of e . **(4)**

Giving your answers in exact form, solve the equations

a $\ln(4x - 1) = 2,$ (3)

b $7 - e^{1-3y} = 0.$ (3)

a Simplify

$$\frac{x^2 - 4x + 3}{x^2 + x - 2} \quad (3)$$

b Solve the equation

$$\ln(x^2 - 4x + 3) = 1 + \ln(x^2 + x - 2),$$

giving your answer in terms of e. (4)

Giving your answers to an appropriate degree of accuracy, solve the simultaneous equations

$$e^y + 5 - 9x = 0$$

$$y - \ln(x + 4) = 2$$

(7)

a Given that $t = \ln x$, find expressions in terms of t for

i $\ln \sqrt{x}$,

ii $\ln (e^2x)$. **(4)**

b Hence, or otherwise, solve the equation

$$5 + \ln \sqrt{x} = \ln (e^2x). \quad \text{(3)}$$