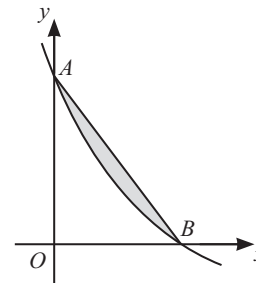


2 Solve the equation $e^{2x}(e^{2x} - 8) = 48$.

[3]

5



The diagram shows the curve with equation $y = 8e^{-\frac{1}{2}x} - 1$. The curve meets the axes at the points A and B . The shaded region is bounded by the curve and the line segment AB .

(a) Show that the x -coordinate of B is $6 \ln 2$.

[2]

(b) Find the area of the shaded region. Give your answer in the form $p \ln 2 - q$, where p and q are positive integers. [5]

[5]

1 Solve the equation $\ln(3x+5) - \ln(x-2) = 4$. Give your answer in an exact form. [4]

[illegible]

2 (a) Use logarithms to solve the inequality $4^x < 0.05$. Give your answer in the form $x < a$, where the value of a is correct to 3 significant figures. [2]

[illegible]

(b) Solve the inequality $|3x+8| < 9$. [3]

[illegible]

(c) Hence state the integers that satisfy both of the inequalities in parts (a) and (b). [1]

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(4)

6 A curve has equation $(x^2 - 3)\ln y + 6x = 14$.

(a) Show that there is no point on the curve at which the y -coordinate is e^{-1} . [3]

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(b) Find the equation of the tangent to the curve at the point $(2, e^2)$. Give your answer in the form $y = mx + c$, where m and c are exact constants. [6]

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