
Solving Equations using Logarithms - Edexcel Past Exam Questions

1. Find, giving your answer to 3 significant figures where appropriate, the value of x for which
- (a) $3^x = 5$, (3)
- (b) $\log_2(2x + 1) - \log_2 x = 2$. (4)
- Jan 05 Q3**
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2. Solve
- (a) $5^x = 8$, giving your answer to 3 significant figures, (3)
- (b) $\log_2(x + 1) - \log_2 x = \log_2 7$ (3)
- June 05 Q2**
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3. (i) Write down the value of $\log_6 36$. (1)
- (ii) Express $2 \log_a 3 + \log_a 11$ as a single logarithm to base a . (3)
- June 06 Q3**
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4. Solve the equation $5^x = 17$, giving your answer to 3 significant figures. (3)
- Jan 07 Q4**
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5. (a) Find, to 3 significant figures, the value of x for which $8^x = 0.8$. (2)
- (b) Solve the equation
- $$2 \log_3 x - \log_3 7x = 1. \quad (4)$$
- June 07 Q6**
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6. Given that a and b are positive constants, solve the simultaneous equations

$$a = 3b,$$

$$\log_3 a + \log_3 b = 2.$$

Give your answers as exact numbers.

(6)

Jan 08 Q5

7. (a) Find, to 3 significant figures, the value of x for which $5^x = 7$. (2)
- (b) Solve the equation $5^{2x} - 12(5^x) + 35 = 0$. (4)
- June 08 Q4**
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8. Given that $0 < x < 4$ and

$$\log_5(4 - x) - 2 \log_5 x = 1,$$

Find the value of x .

(6)

Jan 09 Q4

9. (a) Find the value of y such that

$$\log_2 y = -3. \quad (2)$$

(b) Find the values of x such that

$$\frac{\log_2 32 + \log_2 16}{\log_2 x} = \log_2 x. \quad (5)$$

June 09 Q8

10. (a) Find the positive value of x such that

$$\log_x 64 = 2. \quad (2)$$

(b) Solve for x $\log_2(11 - 6x) = 2 \log_2(x - 1) + 3.$

(6)

Jan 10 Q5

11. (a) Given that

$$2 \log_3(x - 5) - \log_3(2x - 13) = 1,$$

Show that $x^2 - 16x + 64 = 0.$ (5)

(b) Hence, or otherwise, solve $2 \log_3(x - 5) - \log_3(2x - 13) = 1.$ (2)

June 10 Q7

12. (a) Sketch the graph of $y = 7^x$, $x \in \mathbb{R}$, showing the coordinates of any points at which the graph crosses the axes. (2)

(b) Solve the equation

$$7^{2x} - 4(7^x) + 3 = 0,$$

giving your answers to 2 decimal places where appropriate. (6)

Jan 11 Q8

13. Find, giving your answer to 3 significant figures where appropriate, the value of x for which

(a) $5^x = 10,$ (2)

(b) $\log_3(x - 2) = -1.$ (2)

June 11 Q3
