Logarithms

Specification: AQA 7357: F3, B1 · Edexcel 9MA0: 6.3, 2.1

HOMEWORK Consolidation

1 Write as a logarithm:
(a) $6^2 = 36$
(b) $2^{-3} = \frac{1}{8}$
AQA F3 · Edexcel 6.3

2 Find the value of:
(a) $\log_7 343$
(b) $\log_{10} 0.0001$
AQA F3 · Edexcel 6.3

3 Find the value of $\log_9 27$.
AQA F3, B1 · Edexcel 6.3, 2.1

4 Solve $\log_6 x = 3$.
AQA F3 · Edexcel 6.3

5 Solve $\log_x 81 = 4$.
AQA F3 · Edexcel 6.3

6 Solve $\log_5 (2x + 3) = 2$.
AQA F3 · Edexcel 6.3

7 The curve $y = 2^x$ passes through $(a, 20)$. Write a as a logarithm, then use a calculator to find it to 3 d.p.
AQA F3, F5 · Edexcel 6.3, 6.5

8 A quantity is modelled by $N = 3^t$. Use logarithms to find when $N = 500$, to 3 s.f. (calculator).
AQA F3, F7 · Edexcel 6.3, 6.7

9 Without a calculator, find the two consecutive integers that $\log_3 200$ lies between.
AQA F3 · Edexcel 6.3

10 Sketch $y = \log_3 x$. Show where it crosses the x-axis, the point where $y = 1$, and the asymptote.
AQA F3, B9 · Edexcel 6.3, 2.9

11 *Edexcel-style*. Without a calculator:
(a) write down the value of $\log_3 1$ [1 mark]
(b) find the value of $\log_3 \sqrt{27}$ [2 marks]
(c) solve $\log_2 (x^2 - 1) = 3$ [3 marks]
AQA F3 · Edexcel 6.3 · Edexcel-style

12 *AQA-style*. Given that $\log_a 16 = \frac{4}{3}$, where $a > 0$:
(a) find the value of a [3 marks]
(b) hence find the value of $\log_a 2$ [2 marks]
AQA F3, B1 · Edexcel 6.3, 2.1 · AQA-style