Logs & Exponential

Part 1: Non-Calculator

1)

Evaluate $\log_5 2 + \log_5 50 - \log_5 4$. **3**

2)

Find x if $4 \log_x 6 - 2 \log_x 4 = 1$. **3**

3)

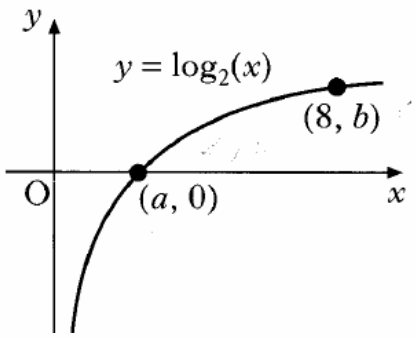
Solve the equation $\log_2(x + 1) - 2\log_2(3) = 3$. **4**

4)

The diagram shows a sketch of part of the graph of $y = \log_2(x)$.

(a) State the values of a and b. **1**

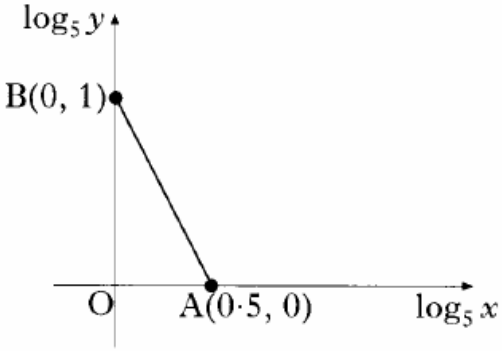
(b) Sketch the graph of $y = \log_2(x + 1) - 3$. **3**



5)

The graph illustrates the law $y = kx^n$.

If the straight line passes through A(0·5, 0) and B(0, 1), find the values of k and n. **4**



Part 2: Calculator

6)

Find the x-coordinate of the point where the graph of the curve with equation $y = \log_3 (x - 2) + 1$ intersects the x-axis. **3**

7)

Before a forest fire was brought under control, the spread of the fire was described by a law of the form $A = A_0 e^{kt}$ where A_0 is the area covered by the fire when it was first detected and A is the area covered by the fire t hours later.

If it takes one and half hours for the area of the forest fire to double, find the value of the constant k. **3**