

First Year Maths and Further Maths combined Test A10

Exponentials and logarithms

20 minutes

Throughout the entire test all working must be shown and solutions based entirely on graphical or numerical methods may not be acceptable.

1.

- (a)** Given that $\log_3 c = m$ and $\log_{27} d = n$, express $\frac{\sqrt{c}}{d^2}$ in the form 3^y , where y is an expression in terms of m and n .

[4 marks]

- (b) Show that the equation

$$\log_4(2x + 3) + \log_4(2x + 15) = 1 + \log_4(14x + 5)$$

has only one solution and state its value.

[4 marks]

[illegible]

[illegible]

[illegible]

3.

Solve the equation

$$2^{2x+5} - 7(2^x) = 0$$

giving your answer to 2 decimal places.

(Solutions based entirely on graphical or numerical methods are not acceptable.)

(4)

[illegible]

[illegible]