

FURTHER PURE MATHEMATICS

Paper 1

2015 — Winter 2019

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2 - (4PM0-S 2017-Paper 1-Q1) - INDICES

Find the exact solution of the equation

$$\frac{16}{e^x} - e^x = 6$$

(5)

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ANSWERS

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1 - (4PM0-W 2015-Paper 1-Q6) - INDICES

(a)	$\log 3^z = \log 4$ $z = \frac{\log 4}{\log 3} = 1.26$
(b)	$(3^y)^2 - 13(3^y) + 36 = 0$ $(3^y - 4)(3^y - 9) = 0$ $3^y = 4$ or $3^y = 9$ $y = 1.26$ or $y = 2$
(c)	$3^x 2^x - 3^x - 4(2^x) + 4 = 0$ $(3^x - 4)(2^x - 1) = 0$ $3^x = 4$ or $2^x = 1$ $x = 1.26$ or $x = 0$

2 - (4PM0-S 2017-Paper 1-Q1) - INDICES

$16 - (e^x)^2 = 6e^x$	M1
$(e^x)^2 + 6e^x - 16 = 0$	A1
$(e^x + 8)(e^x - 2) = 0$	M1
$(e^x = -8 \text{ (not poss)})$	
$e^x = 2 \quad x = \ln 2$	M1A1
	[5]