

P1 June 2001

(a) Given that $8 = 2^k$, write down the value of k . (1)

(b) Given that $4^x = 8^{2-x}$, find the value of x . (4)

P1 January 2002

Given that $2^x = \frac{1}{\sqrt{2}}$ and $2^y = 4\sqrt{2}$,

(a) find the exact value of x and the exact value of y , (3)

(b) calculate the exact value of 2^{y-x} . (2)

P2 November 2002

(a) Using the substitution $u = 2^x$, show that the equation $4^x - 2^{(x+1)} - 15 = 0$ can be written in the form $u^2 - 2u - 15 = 0$. (2)

(b) Hence solve the equation $4^x - 2^{(x+1)} - 15 = 0$, giving your answers to 2 decimal places. (4)

P1 January 2003

(a) Given that $3^x = 9^{y-1}$, show that $x = 2y - 2$. (2)

P1 November 2004

Solve the equation $2^{1-x} = 4^x$. (3)

January 2005

(a) Write down the value of $16^{\frac{1}{2}}$. (1)

(b) Find the value of $16^{-\frac{3}{2}}$. (2)

June 2005

(a) Write down the value of $8^{\frac{1}{3}}$. (1)

(b) Find the value of $8^{-\frac{2}{3}}$. (2)

June 2007

(a) Find the value of $8^{\frac{4}{3}}$. (2)

(b) Simplify $\frac{15x^{\frac{4}{3}}}{3x}$. (2)

January 2008

(a) Write down the value of $16^{\frac{1}{4}}$. (1)

(b) Simplify $(16x^{12})^{\frac{3}{4}}$. (2)

January 2009

(a) Write down the value of $125^{\frac{1}{3}}$. (1)

(b) Find the value of $125^{-\frac{2}{3}}$. (2)

June 2009

Given that $32\sqrt{2} = 2^a$, find the value of a . (3)

January 2011

(a) Find the value of $16^{-\frac{1}{4}}$. (2)

(b) Simplify $x \left(2x^{-\frac{1}{4}} \right)^4$.

(2)

June 2011

(a) $25^{\frac{1}{2}}$,

(1)

(b) $25^{-\frac{3}{2}}$.

(2)

June 2012

(a) Evaluate $(32)^{\frac{3}{5}}$, giving your answer as an integer.

(2)

(b) Simplify fully $\left(\frac{25x^4}{4} \right)^{-\frac{1}{2}}$.

(2)

January 2013

Express 8^{2x+3} in the form 2^y , stating y in terms of x .

(2)

ANSWERS:

January 2005

(a) 4 (b) $\frac{1}{64}$

June 2005

(a) 2 (b) $\frac{1}{4}$

June 2007

(a) 16 (b) $5x^{\frac{1}{3}}$

January 2008

(a) 2 (b) $8x^9$

January 2009

(a) 5 (b) $\frac{1}{25}$ or 0.04

June 2009

(a) $\frac{11}{2}$ $\left(\text{or } 5\frac{1}{2} \text{ or } 5.5 \right)$

January 2011

(a) 0.5 (b) 16

June 2011

(a) 5 (b) $\frac{1}{125}$ or 0.008

June 2012

(a) 8 (b) $\frac{2}{5x^2}$

January 2013

$6x \pm 9$