HIGHER

6.2 Fractional and Negative Indices: 10-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

Key Index Laws to Recall

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Before you start: a^0 = 1 for any non-zero a. A negative index flips the base into a fraction: a^-n = 1/a^n. A fractional index is a root: a^(1/n) = nth root of a, and a^(m/n) = (nth root of a)^m. When multiplying powers of the same base, add the indices: a^m * a^n = a^(m+n). When dividing powers of the same base, subtract the indices: a^m / a^n = a^(m-n). When raising a power to a power, multiply the indices: (a^m)^n = a^(m*n). These rules still apply when m and n are fractions or negative numbers.

1 Work out the value of each expression. Give each answer as a fraction.

(a) 4^{-1} **(1)**

.....

(b) 10^{-2} **(1)**

.....

(c) 2^{-4} **(1)**

.....

(Total for Question 1 is 3 marks)

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2 Work out the value of:

(a) $4^{-1/2}$ **(2)**

.....

(b) $9^{-3/2}$ **(2)**

.....

(Total for Question 2 is 4 marks)

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3 Simplify $(4x^6)^{1/2}$.

(Total for Question 3 is 2 marks)

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Mark scheme · 6.2 Fractional and Negative Indices: 10-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

(a) 1/4 cao **B1**

(a) Answer: 1/4

(b) 1/100 oe **B1**

(b) Answer: 1/100

(c) 1/16 cao **B1**

(c) Answer: 1/16

Question 2

(a) $4^{1/2} = 2$ seen, or $1/(4^{1/2})$ written **M1**

(a) 1/2 oe (0.5) cao **A1**

(a) Answer: 1/2 (0.5)

(b) $9^{1/2} = 3$ and $3^3 = 27$ (or $9^{3/2} = 27$) seen **M1**

(b) 1/27 oe cao **A1**

(b) Answer: 1/27

Question 3

$(4)^{1/2} = 2$ or $(x^6)^{1/2} = x^3$ **M1**

$2x^3$ oe **A1**

Answer: $2x^3$

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