A-Level Starter Activity

Jethwa Maths

Topic: Simple Index Laws

Chapter Reference: Pure 1, Chapter 1

8 minutes

1. Express 8^{2x+3} in the form 2^y stating y in terms of x **(3)**

3. Evaluate $\frac{\sqrt{200}}{\sqrt{8}}$ **(2)**

3. Express $7^4 \times 49^{10}$ in the form 7^k **(2)**

4. Simplify $x(2x^{-\frac{1}{4}})^4$ **(2)**

5. Simplify fully: $(\frac{64x^6}{25y^2})^{-\frac{1}{2}}$ **(3)**

Solutions

1.

$8^{2x+3} = 8^{2x} \times 8^3$	**M1**
$= (2^3)^{2x} \times (2^3)^3$ $= 2^{6x} \times 2^9$	**M1**
$= 2^{6x+9}$ Where $y = 6x + 9$	**M1**

2.

$\frac{\sqrt{200}}{\sqrt{8}} = \frac{\sqrt{100} \times \sqrt{2}}{\sqrt{4} \times \sqrt{2}}$	**M1**
$= \frac{10}{2} = 5$	**M1**

3.

$7^4 \times 49^{10} = 7^4 \times (7^2)^{10} = 7^4 \times 7^{20}$	**M1**
$= 7^{24}$ When $k = 24$	**M1**

4.

$x(2x^{-\frac{1}{4}})^4 = x \times 2^4 \times (x^{-\frac{1}{4}})^4 = x \times 16 \times x^{-1}$	**M1**
$= 16$	**M1**

5.

$(\frac{64x^6}{25y^2})^{-\frac{1}{2}} = \frac{(64x^6)^{-\frac{1}{2}}}{(25y^2)^{-\frac{1}{2}}} = \frac{64^{-\frac{1}{2}}(x^6)^{-\frac{1}{2}}}{25^{-\frac{1}{2}}(y^2)^{-\frac{1}{2}}}$	**M1**
$= \frac{\frac{1}{8}x^{-3}}{\frac{1}{5}y^{-1}} = \frac{5y}{8x^3}$	**M1**