

Year 1 Pure Chapter 1: Algebraic Expressions – Exam Questions (Total Marks 32)

1 Simplify $\left(\frac{125x^6}{64}\right)^{\frac{1}{3}}$

(Total for question 1 is 2 marks)

2 Simplify $\frac{(2x^{\frac{1}{2}})^3}{4x^2}$

(Total for question 2 is 2 marks)

3 Simplify $\left(\frac{216x^6}{27y^3}\right)^{-\frac{2}{3}}$

(Total for question 3 is 2 marks)

- 4 Express 9^{3x+2} in the form 3^y , giving y in the form $ax + b$, where a and b are constants.

(Total for question 4 is 2 marks)

- 5 Express 8^{2x-5} in the form 2^y , giving y in the form $ax + b$, where a and b are constants.

(Total for question 5 is 2 marks)

6 Given $y = 2^x$

(a) Express 4^x in terms of y . **(2)**

(b) Hence, or otherwise, solve $4^x - 6(2^x) - 16 = 0$ **(3)**

(Total for question 6 is 5 marks)

7 Solve: $2^{2x+1} - 5(2^x) - 12 = 0$

(Total for question 7 is 5 marks)

8 Solve the equation

$$8^{2x-5} = 2^{x+1}$$

(Total for question 8 is 3 marks)

9 (a) Solve the equation: $x^2 - 9x + 8 = 0$

(2)

(b) Hence solve the equation: $y^3 - 9y^{\frac{3}{2}} + 8 = 0$

(2)

(Total for question 9 is 4 marks)

10 Find the value of x such that

$$8^{x+1} = 4^{3x-1}$$

(Total for question 10 is 3 marks)