INDICES WORKSHEET

1) State whether the following statements are true or false.

$$3^{2x+1} = 3(3^x)^2$$ b) $$9(3^{2x-2}) = (3^x)^2$$ (2 marks)

2) Simplify the following expressions to have the form $a(2^x)^b$ where a and b are constants.

a) 8^x d) 64^x

b) 2^{2x+5} e) 2^{x-3}

c) $\dfrac{1}{4}$ f) $\dfrac{3}{8}$

                                                            (6 marks)

3) Simplify the following expressions to have the form $a(3^x)^b$ where a and b are constants.

a) 27^x d) 18^2

b) 3^{4x-2} e) 3^{x+5}

c) $\dfrac{2}{81}$ f) $\dfrac{1}{9}$

                                                            (6 marks)

4) Solve $5^x = 125$ (2 marks)

5) Solve $4^x = \dfrac{1}{2}$ (2 marks)

6) Solve $16^{x+2} = \dfrac{1}{4}$ (2 marks)

7) Solve $2^{2x} + 9(2^x) + 8 = 0$ (4 marks)

8) Solve $3^{2x} - 12(3^x) + 27 = 0$ (4 marks)

9) Solve the equation $2^{2x+1} + 5(2^x) - 3 = 0$ (4 marks)

10) Solve $2^x + 2^{2-x} = 5$ (5 marks)

11) Solve $3^{2x} - 9(3^{-2x}) = 8$ (5 marks)

12) Solve $3^{2x+1} - 27(3^{x-1}) + 1 = 0$ (4 marks)