SSS1 FURTHER MATH HOLIDAY ASSIGNMENT

1 Solve the equation $\log_5(8x+7)-\log_5 2x = 2$. [3]

2 **(a)** Given the simultaneous equations

$$\lg x + 2\lg y = 1,$$

$$x - 3y^2 = 13,$$

(i) show that $x^2 - 13x - 30 = 0$. [4]

(ii) Solve these simultaneous equations, giving your answers in exact form. [2]

(b) Solve the equation $\log_a x + 3\log_x a = 4$, where a is a positive constant, giving x in terms of a. [5]

3 **(a)** Solve the equation $5^{w-1} = 12$, giving your answer correct to 2 decimal places. [2]

(b) Solve the equation $x^{\frac{2}{3}} - 5x^{\frac{1}{3}} + 6 = 0$. [3]

4 **(a)** Write $2\lg x - \left(\lg(x+6) + \lg 3\right)$ as a single logarithm to base 10. [2]

(b) Hence solve the equation $2\lg x - \left(\lg(x+6) + \lg 3\right) = 0$. [4]

5 **(a)** Given that $\log_a p + \log_a 5 - \log_a 4 = \log_a 20$, find the value of p. [2]

(b) Solve the equation $3^{2x+1} + 8(3^x) - 3 = 0$. [3]

(c) Solve the equation $4\log_y 2 + \log_2 y = 4$. [3]