

S.S.S. 1 FURTHER MATH HOLIDAY ASSIGNMENT

1. (a) Obtain the first three terms of the expansion of $\left(1 + \frac{x}{2}\right)^{-4}$.

(b) Use your expansion to simplify 1.02^{-4} up to four decimal places.

2. Solve the equation: $\sqrt{4x + 1} + \sqrt{2x - 3} = 4$.

3. Given that $f(x) = x^3 + ax^2 + bx + 8$ and that the remainder when $f(x)$ is

divided by both $(x + 1)$ and $(x + 2)$ are 6 and -8 respectively; find ***a*** and ***b***.

4. Resolve $\frac{4x^3 - 1}{(x + 1)(x^2 + 5)}$ into partial fractions.

5. Three vectors ***a***, ***b*** and ***c*** are $\begin{pmatrix} 8 \\ 3 \end{pmatrix}$, $\begin{pmatrix} 6 \\ -5 \end{pmatrix}$ and $\begin{pmatrix} 2 \\ 3 \end{pmatrix}$ respectively. Find the vector ***d*** such

that $|\mathbf{d}| = \sqrt{41}$ and ***d*** is in the direction of $\mathbf{a} + \mathbf{b} - 2\mathbf{c}$.