SUVA SANGAM COLLEGE
YEAR 13
MATHEMATICS
WORKSHEET 6

Strand 2	Vectors
Sub-Strand	Arithmetic Operations on Vectors
Content Learning Outcome	Apply arithmetic operations on vectors.
Reference from Text	Pg 37 - 41

Questions

	CONCEPT IN BRIEF: The scalar is multiplied with each element of the vector. Given that the vector $\tilde{v} = \begin{pmatrix} x \\ y \\ z \end{pmatrix}$ and k is a scalar, then $k\begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} kx \\ ky \\ kz \end{pmatrix}$
1.	Given vectors $\tilde{c} = \begin{pmatrix} -1 \\ 2 \\ 4 \end{pmatrix} and\ \tilde{d} = \begin{pmatrix} -2 \\ 4 \\ 3 \end{pmatrix}$, find the constant k such that $3\tilde{c} + k\tilde{d} = \begin{pmatrix} 1 \\ -2 \\ 6 \end{pmatrix}$
	CONCEPT IN BRIEF: While adding or subtracting vectors, just add or subtract the respective components. Given vector $\tilde{a} = \begin{pmatrix} a_1 \\ a_2 \\ a_3 \end{pmatrix}$ and $\tilde{b} = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$, then $\tilde{a} \pm \tilde{b} = \begin{pmatrix} a_1 \\ a_2 \\ a_3 \end{pmatrix} \pm \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$ $= \begin{pmatrix} a_1 \pm b_1 \\ a_2 \pm b_2 \\ a_3 \pm b_3 \end{pmatrix}$
2.	Vectors are given as $\tilde{x} = \begin{pmatrix} 2 \\ -3 \\ 1 \end{pmatrix}$ and $\tilde{y} = \begin{pmatrix} 0 \\ 3 \\ -1 \end{pmatrix}$, find: (a) $\tilde{x} + \tilde{y}$ (b) $2\tilde{y} - \tilde{x}$
	CONCEPT IN BRIEF: If two points P_1 and P_2 are known, the vector from P_1 to P_2, $\overrightarrow{P_1P_2}$ is found by: $\overrightarrow{P_1P_2} = P_2 - P_1$
3.	Point $P_1 = (0, -3, 4)$ and $P_2 = (-1, 2, -1)$. Find the vector $\overrightarrow{P_1P_2}$