Exercise 1D

Question 1:

(i) $(2\sqrt{3} - 5\sqrt{2})$ and $(\sqrt{3} + 2\sqrt{2})$

We have:

$= (2\sqrt{3} - 5\sqrt{2}) + (\sqrt{3} + 2\sqrt{2})$
$= (2\sqrt{3} + \sqrt{3}) + (-5\sqrt{2} + 2\sqrt{2})$.
$= (2 + 1)\sqrt{3} + (-5 + 2)\sqrt{2}$
$= 3\sqrt{3} - 3\sqrt{2}$

(ii) $(2\sqrt{2} + 5\sqrt{3} - 7\sqrt{5})$ and $(3\sqrt{3} - \sqrt{2} + \sqrt{5})$

We have:

$(2\sqrt{2} + 5\sqrt{3} - 7\sqrt{5}) + (3\sqrt{3} - \sqrt{2} + \sqrt{5})$
$= (2\sqrt{2} - \sqrt{2}) + (5\sqrt{3} + 3\sqrt{3}) + (-7\sqrt{5} + \sqrt{5})$
$= (2 - 1)\sqrt{2} + (5 + 3)\sqrt{3} + (-7 + 1)\sqrt{5}$
$= \sqrt{2} + 8\sqrt{3} - 6\sqrt{5}$.

(iii) $\left(\frac{2}{3}\sqrt{7} - \frac{1}{2}\sqrt{2} + 6\sqrt{11}\right)$ and $\left(\frac{1}{3}\sqrt{7} + \frac{3}{2}\sqrt{2} - \sqrt{11}\right)$

We have:

$\left(\frac{2}{3}\sqrt{7} - \frac{1}{2}\sqrt{2} + 6\sqrt{11}\right) + \left(\frac{1}{3}\sqrt{7} + \frac{3}{2}\sqrt{2} - \sqrt{11}\right)$
$= \left(\frac{2}{3}\sqrt{7} + \frac{1}{3}\sqrt{7}\right) + \left(-\frac{1}{2}\sqrt{2} + \frac{3}{2}\sqrt{2}\right) + \left(6\sqrt{11} - \sqrt{11}\right)$
$= \left(\frac{2}{3} + \frac{1}{3}\right)\sqrt{7} + \left(-\frac{1}{2} + \frac{3}{2}\right)\sqrt{2} + (6 - 1)\sqrt{11}$
$= \sqrt{7} + \sqrt{2} + 5\sqrt{11}$.

********** END **********