Step-1

Given that w_1, w_2, w_3 are independent and $v_1 = w_2 + w_3, v_2 = w_1 + w_3$ and $v_3 = w_1 + w_2$

Let $c_1v_1 + c_2v_2 + c_3v_3 = 0$

$$\text{Thus, } c_1(w_2 + w_3) + c_2(w_1 + w_3) + c_3(w_1 + w_2) = 0$$
$$(c_2 + c_3)w_1 + (c_1 + c_3)w_2 + (c_1 + c_2)w_3 = 0$$

$$\text{i.e.} c_2 + c_3 = 0 \qquad (\text{since } w_1, w_2, w_3 \text{ are linearly independent})$$
$$c_1 + c_3 = 0$$
$$c_1 + c_2 = 0$$

Step-2

$$c_2 + c_3 = 0 \qquad ......(1)$$

$$c_1 + c_3 = 0 \qquad ......(2)$$

$$c_1 + c_2 = 0 \qquad ......(3)$$

Subtract equation (2) from equation (1) as follows:

$$\text{So}, c_2 + c_3 - (c_1 + c_3) = 0 - 0$$
$$c_2 + c_3 - c_1 - c_3 = 0$$
$$c_2 - c_1 = 0 \qquad ...... \ (4)$$

Add equation (4) and equation (3) as follows:

$$(c_1 + c_2) + (c_2 - c_1) = 0 + 0$$
$$c_1 + c_2 + c_2 - c_1 = 0$$
$$2c_2 = 0$$
$$c_2 = 0$$

Substitute this value in equation (3) and (4) as follows:

So, $c_1 = 0 \text{ and } c_3 = 0$

Hence, $\boxed{c_1 = 0, c_2 = 0 \text{ and } c_3 = 0}$.

Therefore, v_1, v_2, v_3 are $\boxed{\text{linearly independent}}$.