The well known Pythagorean theorem $x^2 + y^2 = z^2$ was proved to be invalid for other exponents. Meaning the next equation has no integer solutions:

$$x^n + y^n = z^n$$

$2 \cdot 7 + 3 \cdot (2 - 12) + 6 \cdot 2$

$3 - 5x + x^2 - 30(x + 3x^2) - 2$

$$2 \cdot 7 + 3 \cdot (2 - 12) + 6 \cdot 2$$

$$3 - 5x + x^2 - 30(x + 3x^2) - 2$$

$w = \langle 2, 1 \rangle$ as $w = au + bv$
$u = \langle 9, 4 \rangle$ and $v = \langle 0, 1 \rangle$

$\langle 2, 1 \rangle = a\langle 9, 4 \rangle + b\langle 0, 1 \rangle$
$\langle 2, 1 \rangle = \langle 9a, 4a \rangle + \langle 0, b \rangle$
$\langle 2, 1 \rangle = \langle 9a + 0b, 4a + b \rangle$

$2 = 9a \to a = \frac{2}{9}$

$1 = 4a + b = 4\left(\frac{2}{9}\right) + b$
$1 = \frac{8}{9} + b \to b = \frac{1}{9}$

So the linear combo is $a = \frac{2}{9}, b = \frac{1}{9}$