For the e-th power N of the signature of the given message m, we have the following:

$$\sigma(m)^e = \frac{\sigma(m_1)^e \cdot \sigma(m_2)^e}{\sigma(1)^e} \tag{1}$$

Calculating this using the signatures $\sigma(m_1), \sigma(m_2)$ and $\sigma(1)$ as retrieved from the python oracle and using the power function

$$pow(\sigma, e, N)$$

confirms that equation (1)

$$\frac{pow(\sigma(m1), e, N) \cdot pow(\sigma(m2), e, N)}{pow(\sigma(1), e, N)} = \mu \cdot m_1 \cdot m_2 = \mu m = \sigma(m)^e$$

However, calculating $\sigma(m)$ simply by taking its e-th root

$$\sigma(m)^{ed} = (\frac{\sigma(m_1)^e \sigma(m_2)^e}{\sigma(1)^e})^d ..mod..N$$

$$= \frac{\sigma(m_1)^{ed} \sigma(m_2)^{ed}}{\sigma(1)^{ed}} ..mod..N$$

$$= \frac{\sigma(m_1)\sigma(m_2)}{\sigma(1)} ..mod..N$$

fails to give the correct result.