Math Diversion Problem 675

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> Easy to criticize, more difficult to be correct.
> — Charlie Chan

The YouTube video is found at:

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Source: https://www.youtube.com/watch?v=3hrFv_GoPTM
Title: ALGEBRA/LOGARITHMIC EQUATIONS
 Presenter:  Maths Simplified Solutions
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1 The Problem

Given the relations

$$ab = 10\,, \tag{1a}$$
$$\log a - \log b = 2\,. \tag{1b}$$

find the real values for x.

2 The Solution

Taking the common logarithm across (1a), we get

$$\log a + \log b = \log 10 = 1\,. \tag{2}$$

We can combine this last equation with (1b) to solve for $\log a$, to get

$$\log a = \frac{2+1}{2} = \frac{3}{2}\,, \tag{3}$$

On raising 10 to this last equation, we have that

$$a = 10^{3/2} = 10\sqrt{10}\,, \tag{4}$$

and then using (1a) to solve for b, we get

$$b = \frac{10}{10\sqrt{10}} = \frac{1}{\sqrt{10}}\,. \tag{5}$$

Howsomever! WolframAlpha gives the negative of this answer as well. Does this make sense? Well, it does if one is allowed to replace $(\log a - \log b)$ by $\log(a/b)$ in (1b), but, strictly speaking, we would be having the logarithms of negative numbers.