> In a 2-dimensional space that has some affine variety $V(ax^c - by^d, rx^t + sy^u)$, is the resulting graph a/the point(s) where the two functions intersect, or is it simply both functions on the xy-plane?

Technically, neither of the above, but the first option is close. If you have two polynomials $f, g \in k[x, y]$, the variety $V(f, g)$ is the intersection of where $f$ and $g$ both *vanish*. This is the first part of lemma 1.2.2, and there's an example in the video I've just put up.

> Problem 1.2.8

I've included a solution to this problem in the video I've just put up. That being said, I would encourage all of you to try to formulate questions as precisely as you can (eg, if it's a question about a comprehension check problem, do your best to pinpoint why you're stuck). That really helps me figure out what points I need to address in more detail. It also helps you as a learner. (One thing I sometimes do when I'm confused about some piece of math that I'm learning is I start drafting up an email to a mathematician friend of mine, formulating my question as precisely as I can. Probably 95% of the time, I've answered my own question by the time I've finished drafting this email, and I end up hitting "discard" instead of "send.")