

# MAC-CPTM Situations Project

## Situation 02: Parametric Drawings

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### Situation Example 2 – Rose Zbiek

A second example comes from Rose Zbiek's work with parametric GSP drawings. This example, appearing in *CAS-Intensive Mathematics* (Heid and Zbiek, 2004)<sup>1</sup>, was inspired by a student mistakenly grabbing points representing both parameters (A and B in  $f(x) = Ax + B$ ) and dragging them simultaneously (the difference in value between A and B stays constant). This generated a family of functions that coincided in one point. Interestingly, no matter how far apart A and B were initially, if grabbed and moved together, they always coincided on the line  $x = -1$ . See Figure 1 for a screen dump after A and B have been simultaneously dragged. Rose then thought to generate an extension to quadratic functions (which also appears in *CAS-Intensive Mathematics*). Because of her mathematical understanding, Rose was able to recognize the potential of this accident for making mathematical connections – first from the graphical phenomenon to a symbolic proof and then to extend this exploration to a polynomial of higher degree (which generated another interesting relationship along with its proof). In this case, GSP was a vehicle that brought mathematical relationships to the fore. Seeing the phenomenon is not enough – teachers need to recognize the potential for mathematics in the patterns they see.

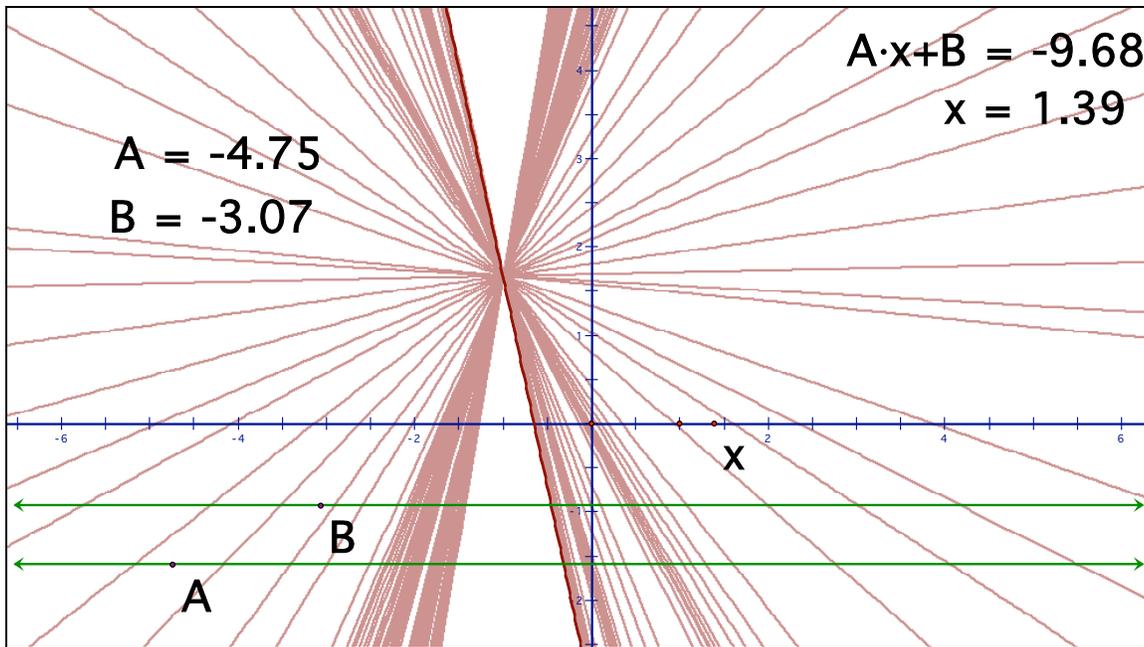


Figure 1. Screen dump showing trace of  $f(x) = Ax + B$  after A and B have been dragged simultaneously.

<sup>1</sup> Heid, M. K. & Zbiek, R. M. (2004). *The CAS-Intensive Mathematics Project*. NSF Grant No. TPE 96-18029

