COMMENTS ON WAKEMAN'S THEOREM

The article "Student Discovers an Original Theorem?" by Duane Bollenbacher and Noah Wakeman appeared in the August 1991 issue of Ohio Journal of School Mathematics. We've just received a note from Duane:

Thanks to all who wrote and commented on the original theorem and proof by Noah Wakeman. Mary Rhein, West Chester Lakota High School, found Noah's theorem in Pre-Calculus by David Cohen, West Publishing Company, 1984. And Don Gerke of Eastwood High School pointed out that this theorem and its proof is found in Pre-Calculus Mathematics by Merrill, 1988. In fact, in Merrill this theorem is proven first and then used to prove the more common theorem:

\[ d = \frac{|Ax_1 + By_1 + C|}{\sqrt{A^2 + B^2}} \]

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And a comment from David Kullman, Miami University:

A bit of elementary trigonometry leads to an easy derivation of the formula:

\[
\cos \theta = \frac{d}{|b_1 - b_2|} = \frac{1}{\sqrt{1 + m^2}}
\]

where \(b_1\) and \(b_2\) are the \(y\)-intercepts, and \(m\) is the common slope. Therefore,

\[ d = \frac{|b_1 - b_2|}{\sqrt{1 + m^2}} \]