

ZMATH 2016e.00738

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Angle bisectors: an algebraic approach.

Consortium 110, 1-2 (2016).

From the text: In algebra courses students are often taught several different forms for linear equations, the slope-intercept form $y = mx + b$, the point-slope form $y - y_1 = m(x - x_1)$, and the standard form $ax + by + c = 0$. I would like to add a fourth form, the normal form $ax + by + c = 0$ with $\sqrt{a^2 + b^2} = 1$. The rest of this article will use this form and some of the vector algebra that is taught in an upper level pre-calculus course to find the equations of angle bisectors and planes that bisect dihedral angles.

Classification: G70

Keywords: analytic geometry; equations of straight lines; linear equations; normal form; angle bisectors; vectors; triangle incenter; coordinates; parametric equations; rhombus; 2-space; 3-space; equations of planes; tetrahedral; bisecting planes; in-spheres; cross products