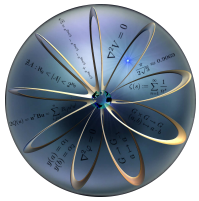

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homogeneous equation

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The *homogeneous equation*

$$f(x,\, y) = 0,$$

where the left hand is a homogeneous polynomial of degree r in x and y, determines the ratio x/y between the indeterminates. One can be persuaded of this by dividing both of the equation by y^r. Then the left depends only on x/y (which may be denoted e.g. by t).

Examples

- The equation $5x + 8y = 0$ determines that $x/y = -\frac{8}{5}$.
- The equation $x^2 - 7xy + 10y^2 = 0$ determines that $x/y = 2$ or $x/y = 5$ (these values are obtained by first dividing both of the equation by y^2 and then solving the equation $(x/y)^2 - 7(x/y) + 10 = 0$).
- The equation $2x^3 - x^2y - 6xy^2 + 3y^3 = 0$ determines that $x/y = \frac{1}{2}$ or $x/y = \pm\sqrt{3}$ (first divide the equation by y^3 and then solve $2(x/y)^3 - (x/y)^2 - 6(x/y) + 3 = 0$).