Coordinate Geometry

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November 12, 2019

To find the midpoint of a line, take the mean of the endpoints.

Gradient = $\frac{\delta y}{\delta x}$

For perpendicular lines with gradients m_1, m_2: $m_1 = \frac{-1}{m_2}$

General formula of a straight line: $y = mx + c$ or $(y - y_0) = m(x - x_0)$, latter preferred as easier.

The intersection of lines can be found by solving simultaneously. In 2D this gives 0,1,∞ solutions

General formula of a circle: $r^2 = (x - a)^2 + (y - b)^2$ where radius is r, center is (a,b)