Linear Algebra and Geometry 1

Systems of equations, matrices, vectors, and geometry

Slope-intercept equations of straight lines in the plane

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MiTM
Man in The Middle AB

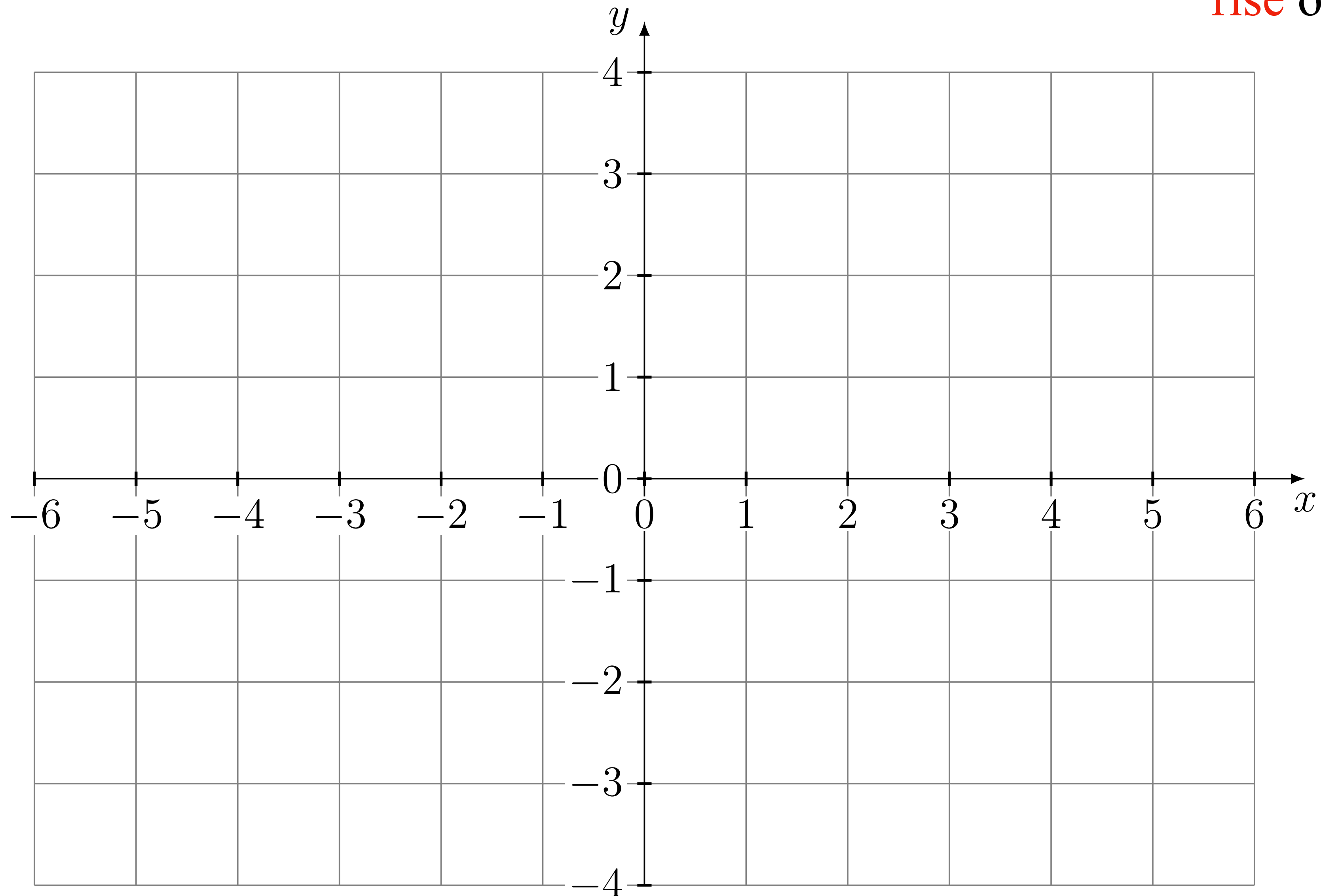# Straight lines in $\mathbb{R}^2$

(m, b)-equation: $y = mx + b$ where $m = \frac{\Delta y}{\Delta x}$ is the slope

Straight lines in $\mathbb{R}^2$

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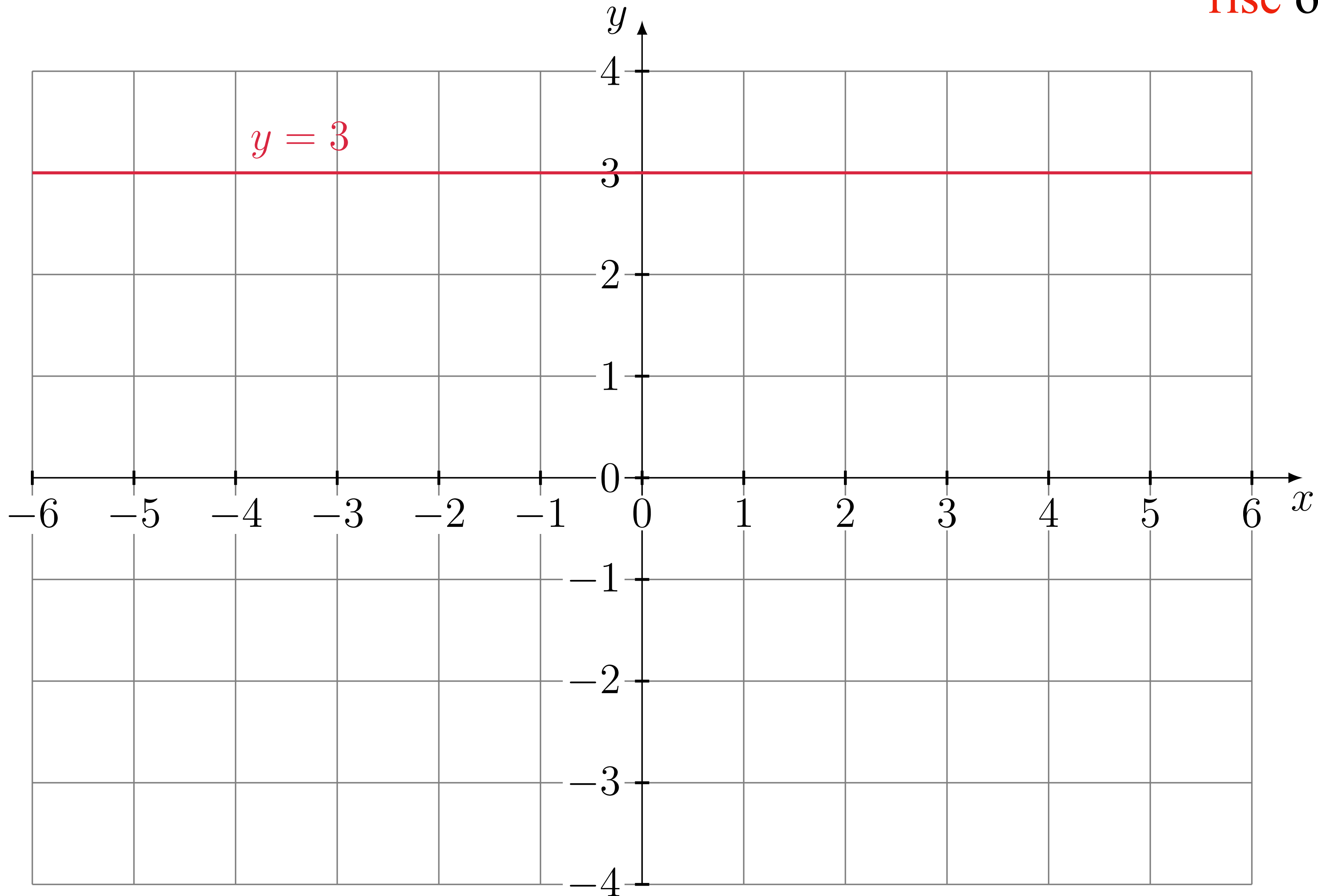
rise over run

Straight lines in $\mathbb{R}^2$

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rise over run

$y = 3$

Straight lines in $\mathbb{R}^2$

(m, b)-equation: $y = mx + b$ where $m = \dfrac{\Delta y}{\Delta x}$ is the slope
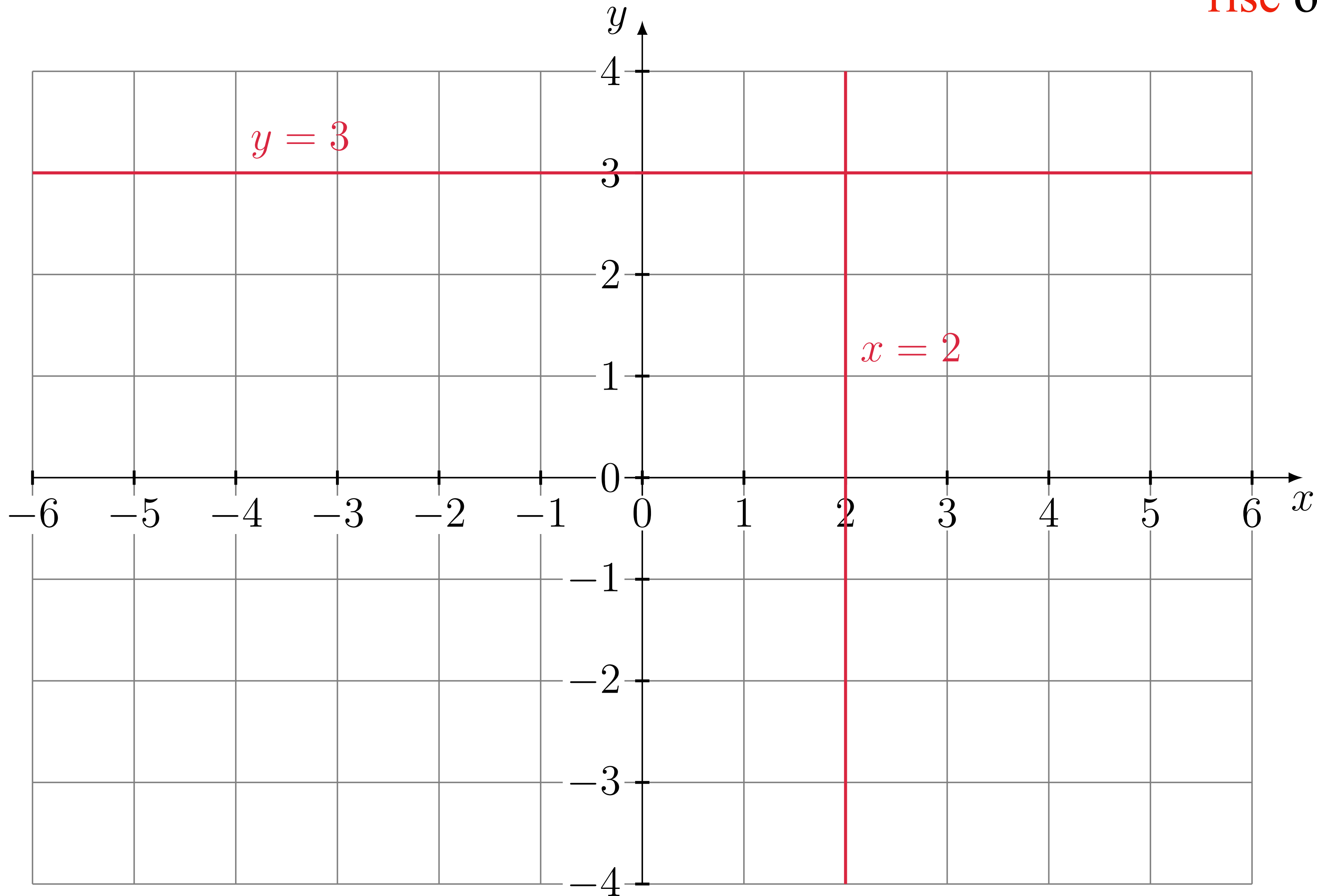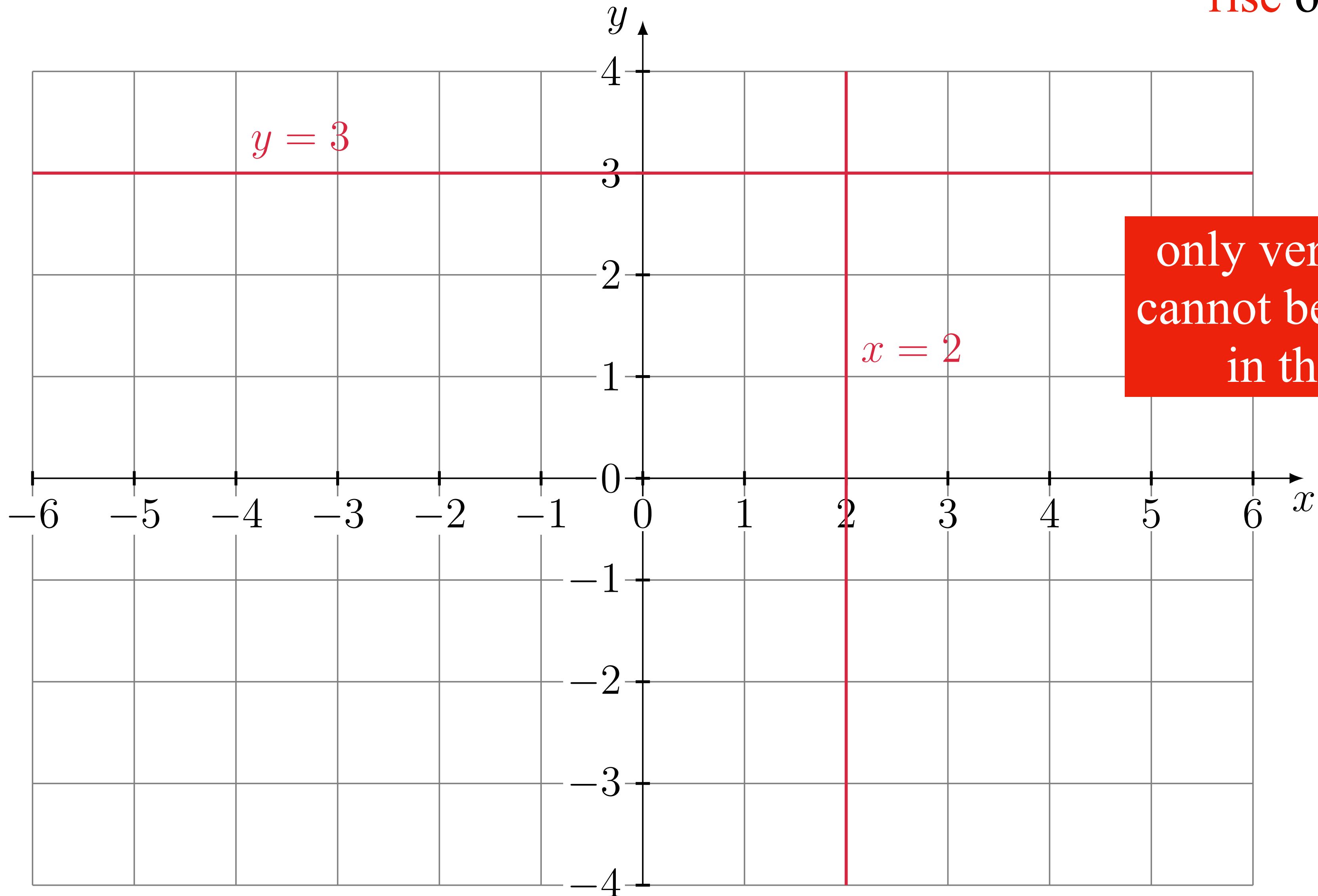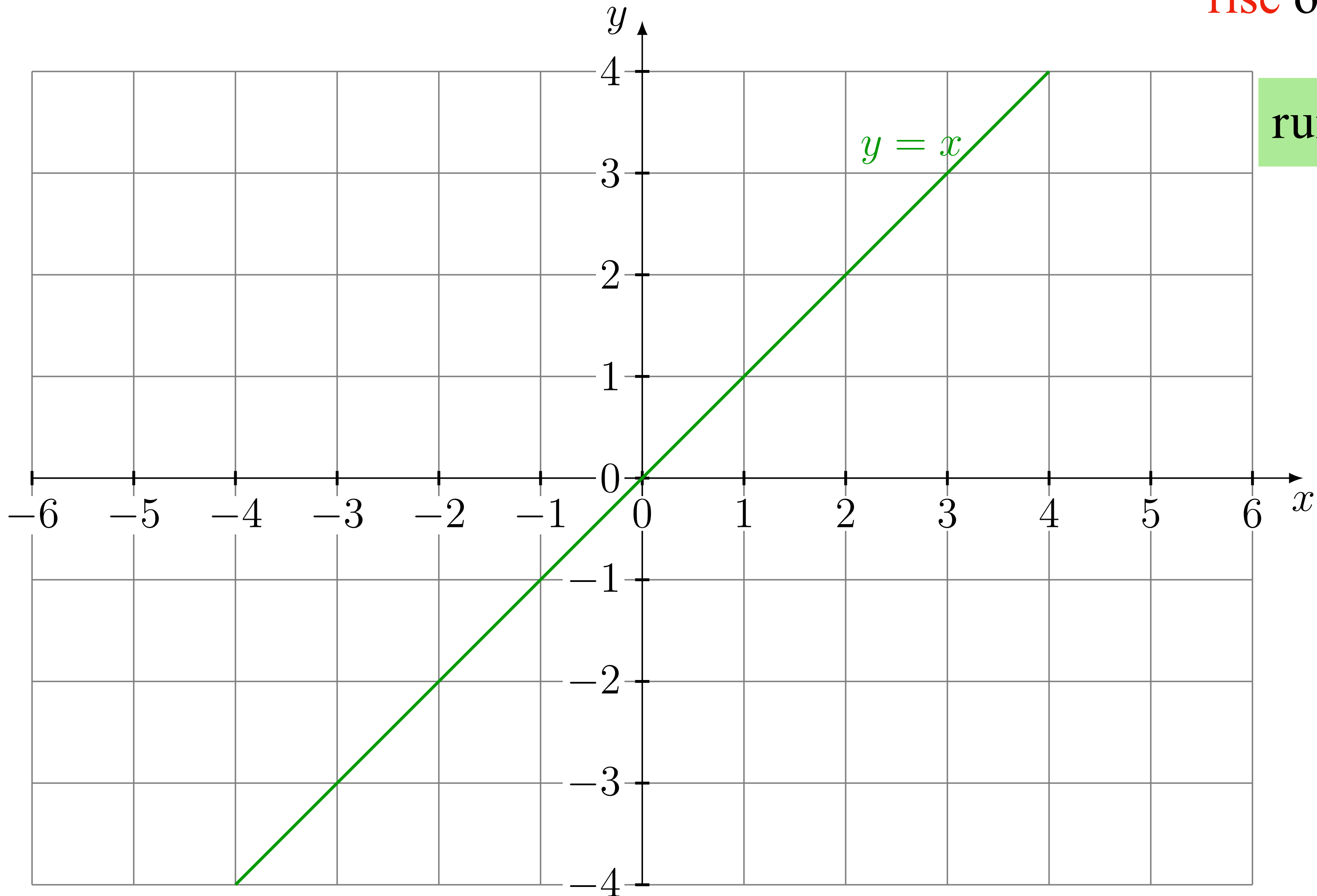
rise over run

$y = 3$

$x = 2$

Straight lines in $\mathbb{R}^2$

(m, b)-equation: $y = mx + b$ where $m = \dfrac{\Delta y}{\Delta x}$ is the slope

rise over run

$y = 3$

$x = 2$

only vertical lines
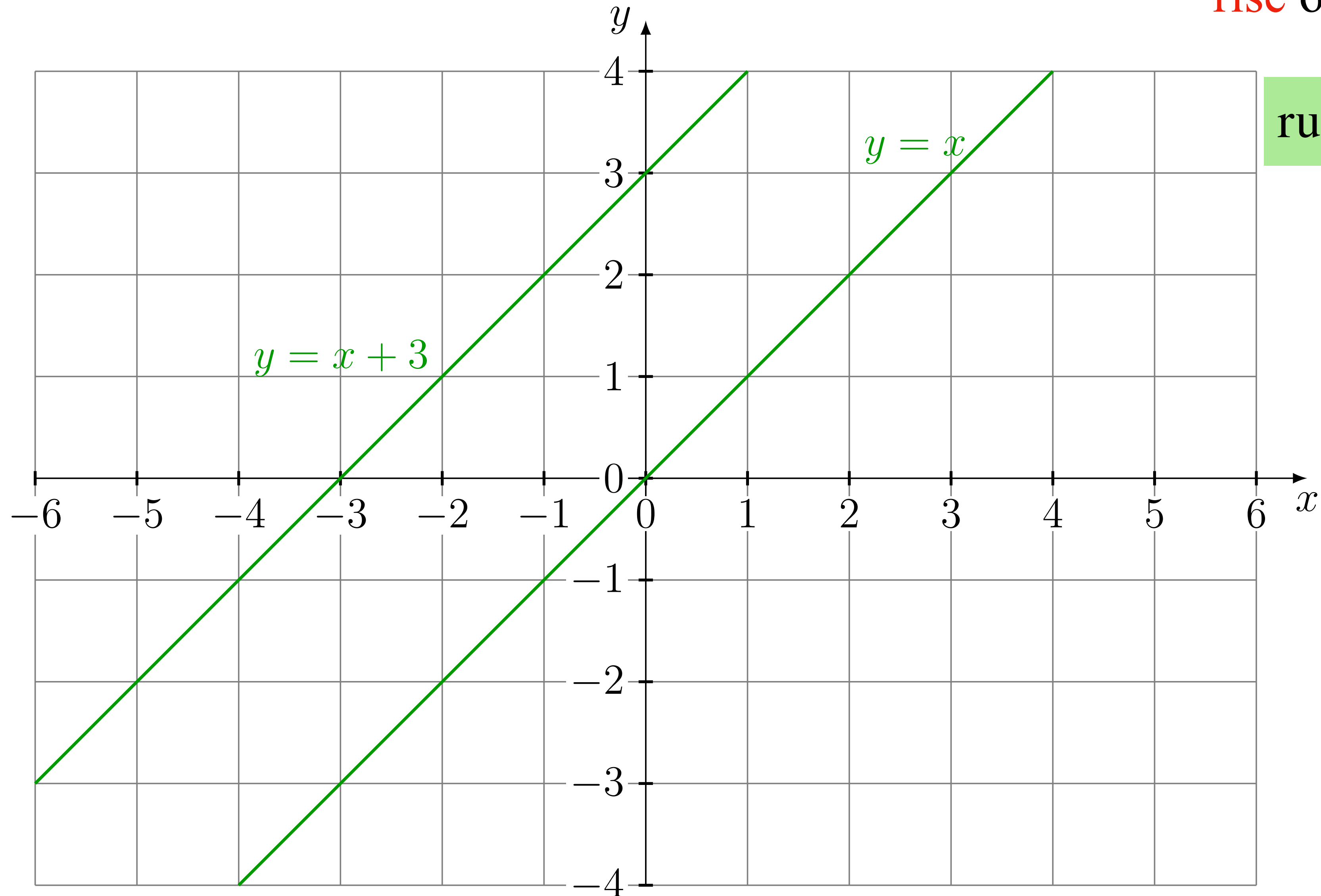cannot be described
in this way

Straight lines in $\mathbb{R}^2$

(m, b)-equation: $y = mx + b$ where $m = \frac{\Delta y}{\Delta x}$ is the slope

rise over run

run = 1, $\quad m = \Delta y$

$y = x$

Straight lines in $\mathbb{R}^2$

(m, b)-equation: $y = mx + b$ where $m = \dfrac{\Delta y}{\Delta x}$ is the slope

rise over run

$y = x$

$y = x + 3$

run $= 1, \quad m = \Delta y$

Straight lines in $\mathbb{R}^2$

(m, b)-equation: $y = mx + b$ where $m = \dfrac{\Delta y}{\Delta x}$ is the slope
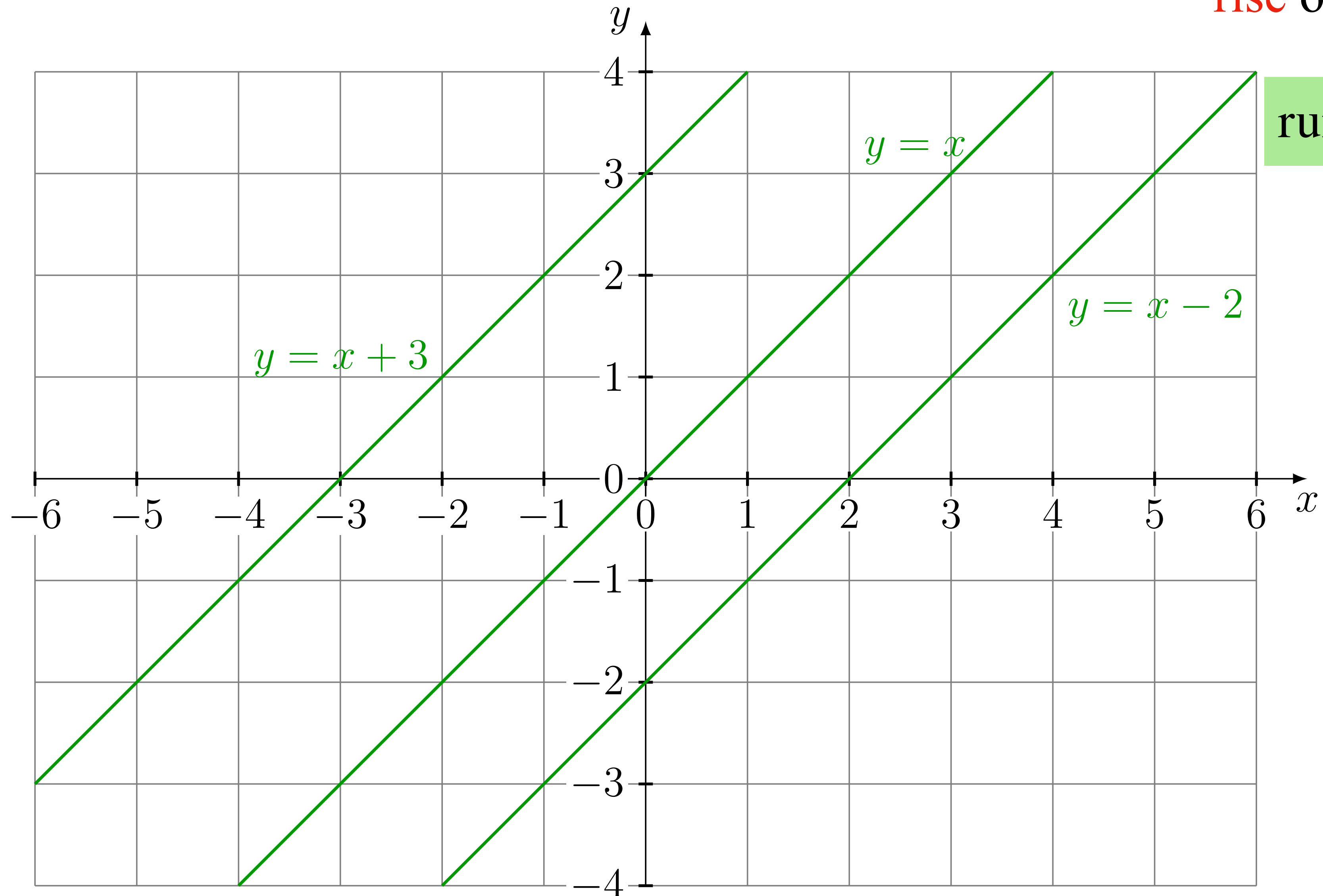
rise over run

run = 1, $\quad m = \Delta y$
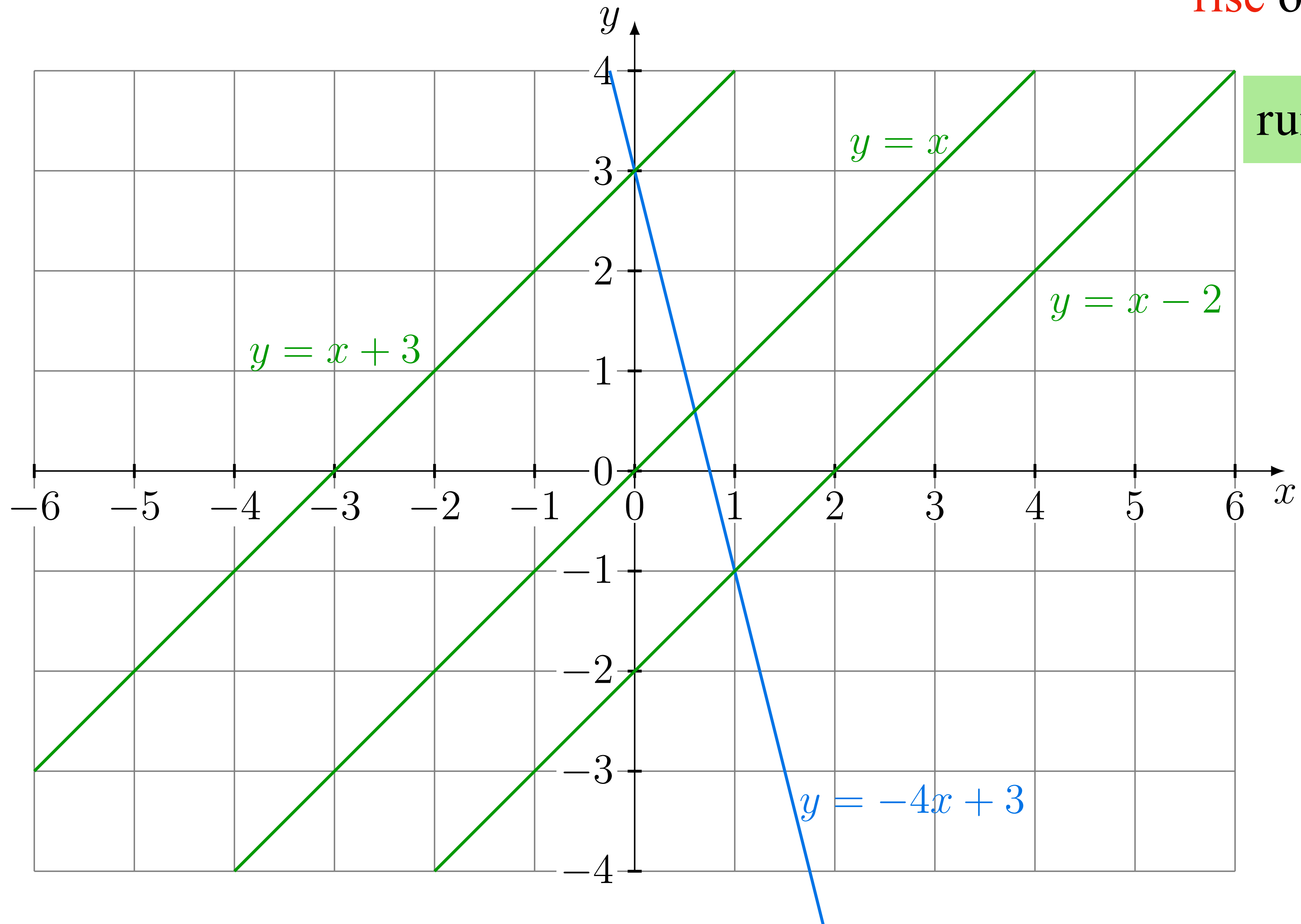

$y = x$

$y = x - 2$

$y = x + 3$

Straight lines in $\mathbb{R}^2$

(m, b)-equation: $y = mx + b$ where $m = \frac{\Delta y}{\Delta x}$ is the slope

rise over run

run = 1, $\quad m = \Delta y$

$y = x$

$y = x - 2$

$y = x + 3$

$y = -4x + 3$

Straight lines in $\mathbb{R}^2$

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Straight lines in $\mathbb{R}^2$

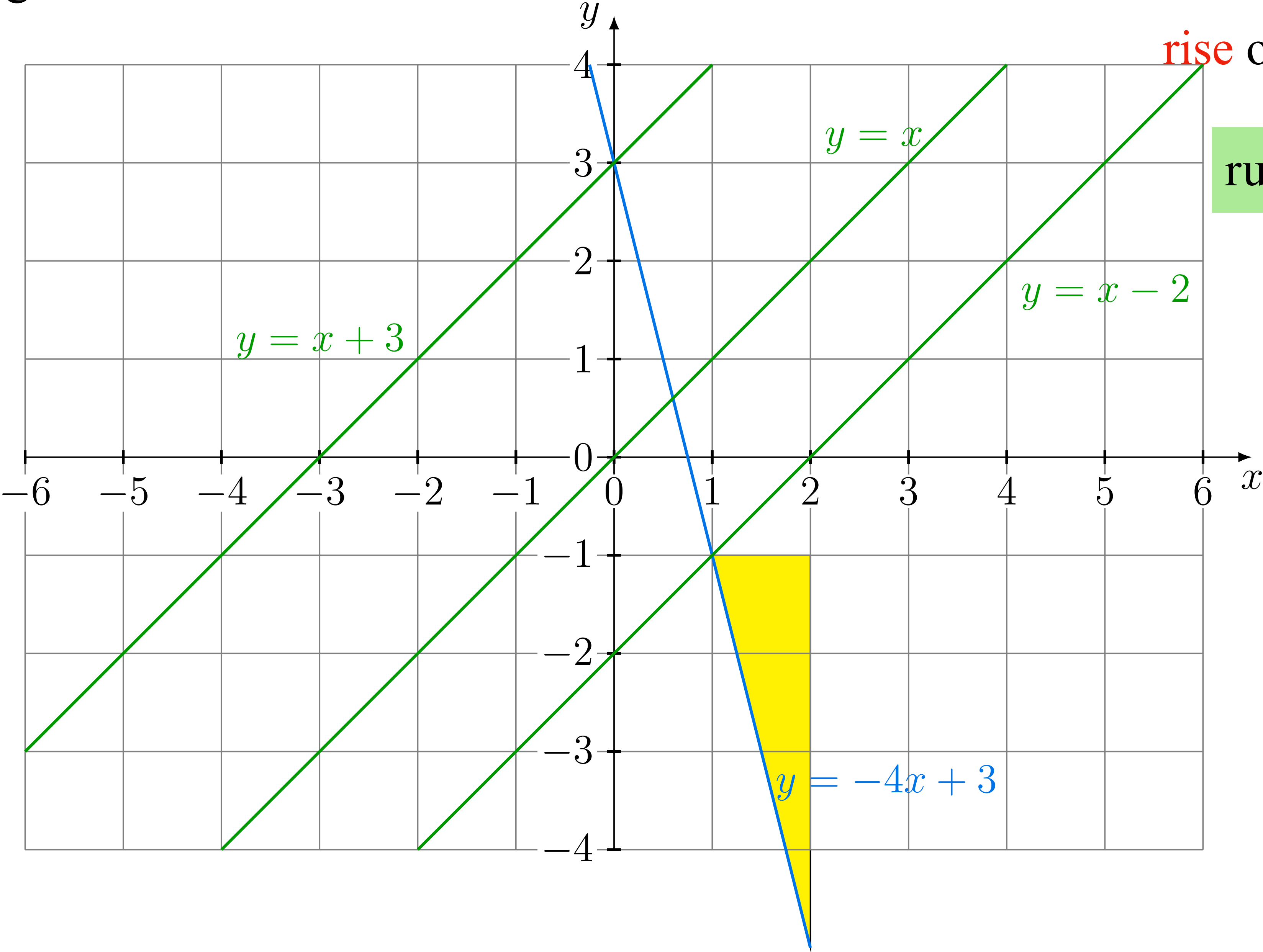(m, b)-equation: $y = mx + b$ where $m = \dfrac{\Delta y}{\Delta x}$ is the slope

rise over run

run = 1, $m = \Delta y$

$y = x$

$y = -\dfrac{2}{3}x - \dfrac{1}{3}$

$y = x - 2$

$y = x + 3$

$y = -4x + 3$

Straight lines in $\mathbb{R}^2$

(m, b)-equation: $y = mx + b$ where $m = \frac{\Delta y}{\Delta x}$ is the slope

rise over run

$y = x$
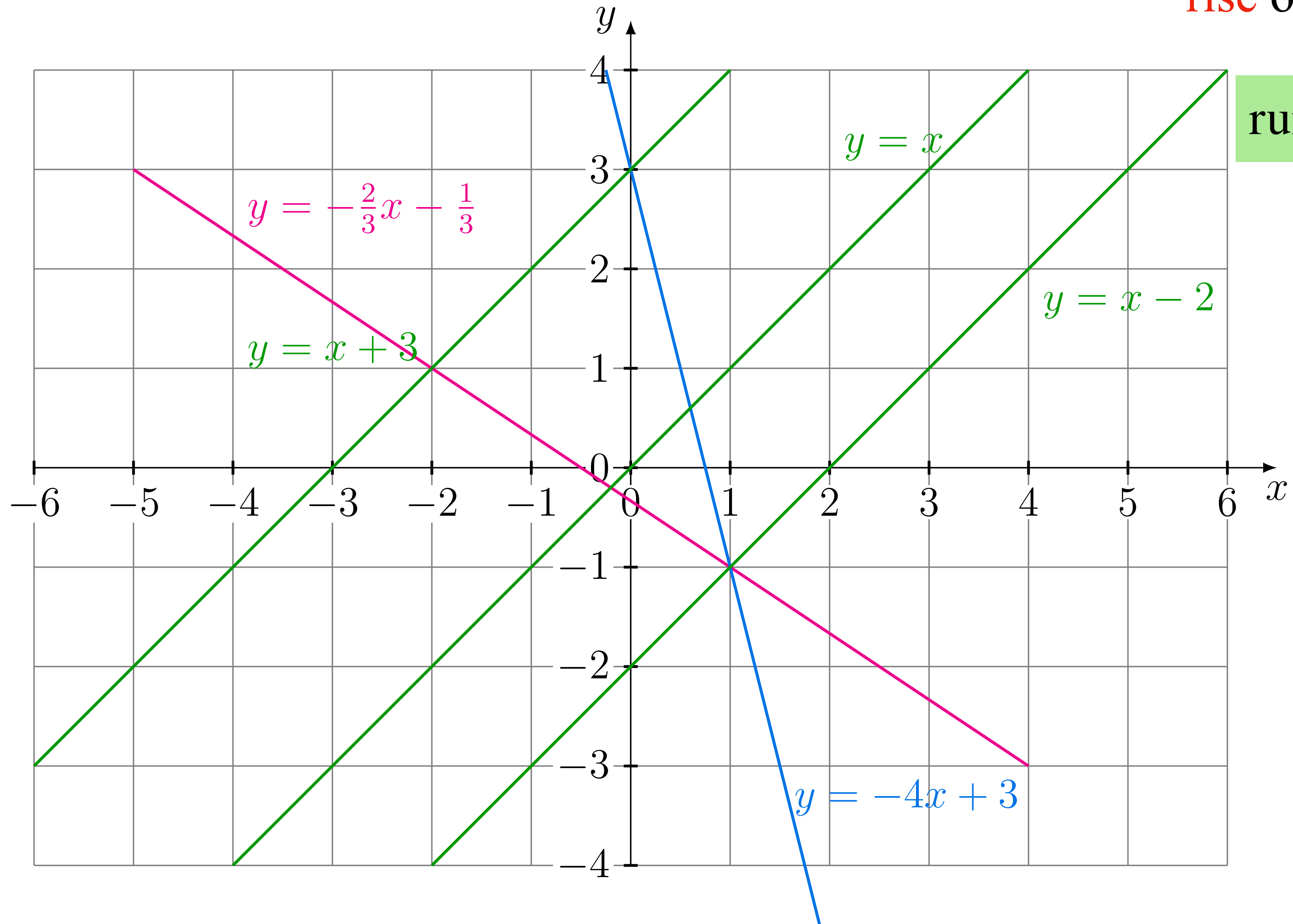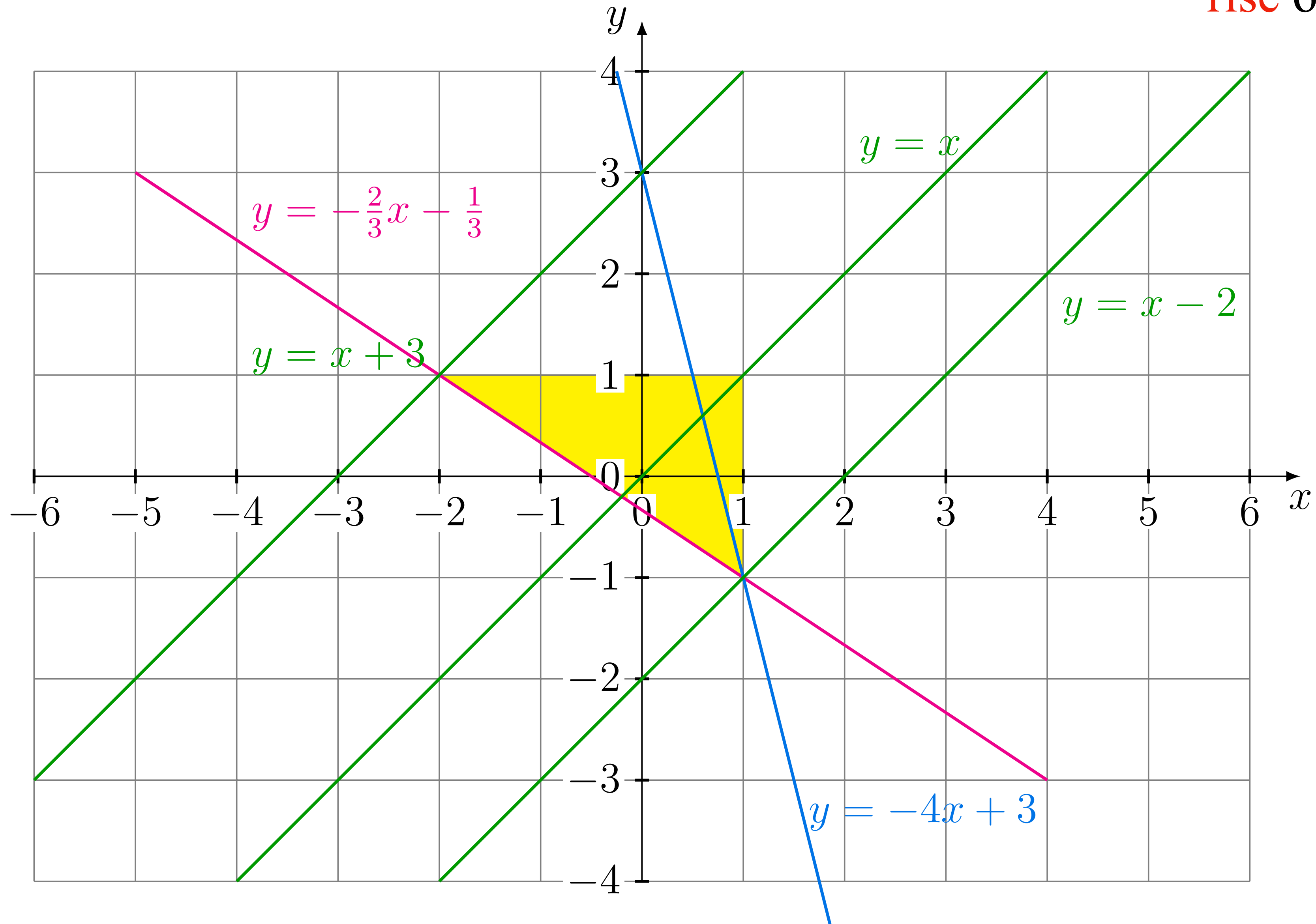
$y = -\frac{2}{3}x - \frac{1}{3}$

$y = x - 2$

$y = x + 3$

$y = -4x + 3$

(m, b)-equation: $y = mx + b$ where $m = \dfrac{\Delta y}{\Delta x}$ is the slope

rise over run

no slope

slope negative
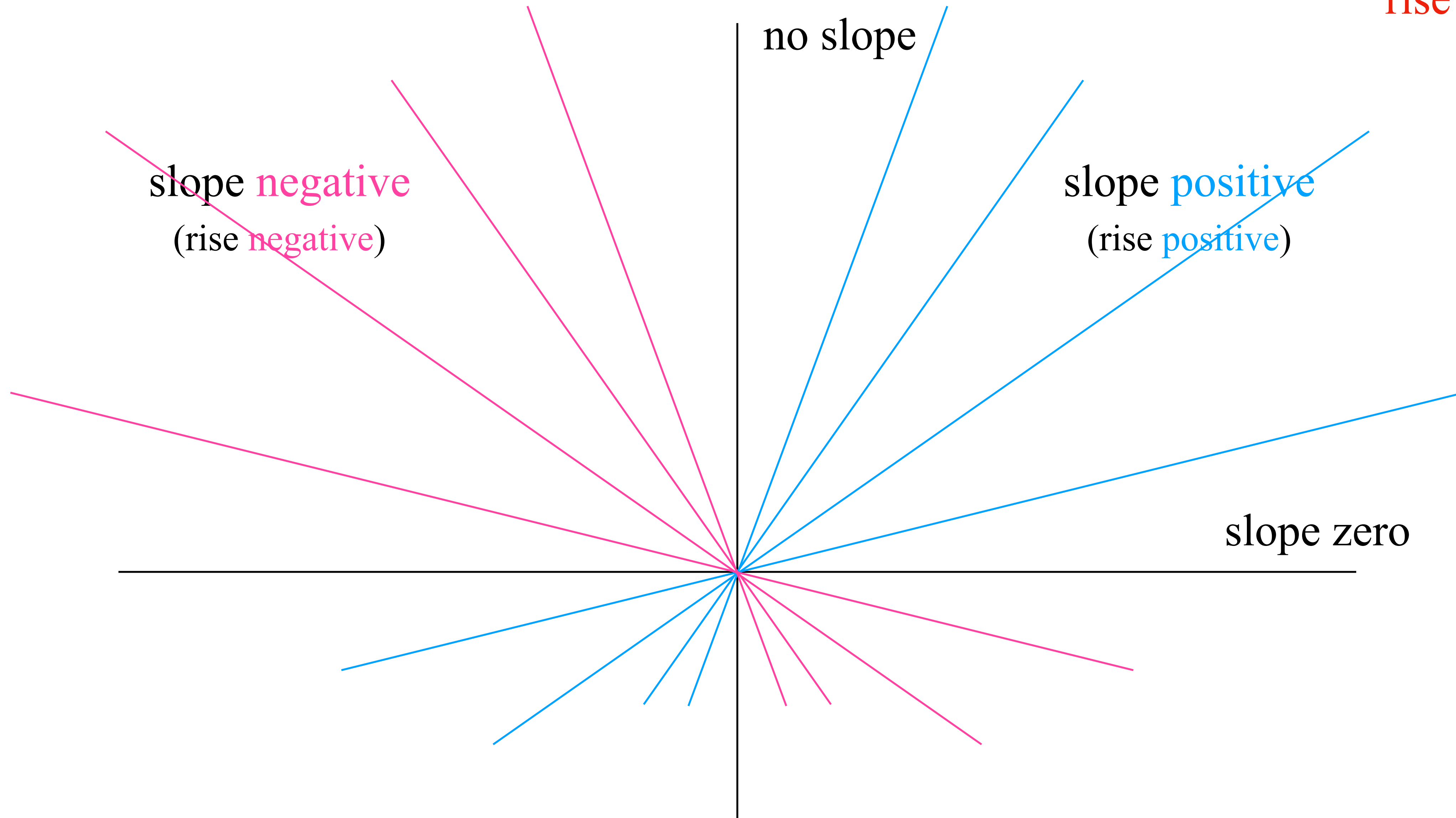
(rise negative)

slope positive

(rise positive)

slope zero

Straight lines in $\mathbb{R}^2$

(m, b)-equation: $y = mx + b$ where $m = \dfrac{\Delta y}{\Delta x}$ is the slope

rise over run

$y = 3$

$y = -\frac{2}{3}x - \frac{1}{3}$

$y = x + 3$

$y = x$

$y = x - 2$

$x = 2$

$y = -4x + 3$