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MATH 304

Linear Algebra

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Abstract

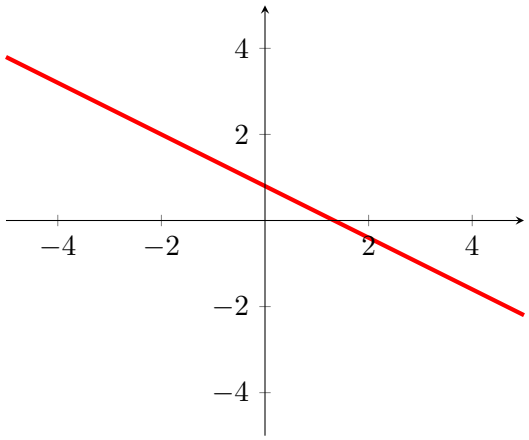
These notes are intended as a resource for myself; past, present, or future students of this course, and anyone interested in the material. The goal is to provide an end-to-end resource that covers all material discussed in the course displayed in an organized manner. If you spot any errors or would like to contribute, please contact me directly.

1 Linear Algebra Intro (1/20)

- solve systems of linear equations.

$3x + 5y = 4$ is an example of a linear equation with two variables.

The set of points (x, y) that satisfy this equation are:



A Linear equation in n variables is given by:

$$a_1x_1 + a_2x_2 + ... + a_nx_n = b$$

a's are my coefficient.
x's are my variable.

m equations given in n unknows follows the format:

$$\begin{aligned} a_{11}x_1 + a_{12}x_2 + ... + a_{1n}x_n &= b_1 \\ a_{21}x_1 + a_{22}x_2 + ... + a_{2n}x_n &= b_2 \\ \vdots \quad & \quad \vdots \quad \quad \vdots \\ a_{m1}x_1 + a_{m2}x_2 + ... + a_{mn}x_n &= b_m \end{aligned}$$

Having a solution means finding numbers
$x_1 = 2, x_2 = -23, x_n = 7$
that satisfy all the equations.

Solve

1) $3x + 4y = 2$
   $-x + 4y = 1$