Justification for row operations

Mitaxi Mehta: Lecture 6

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- Consider the row space of a matrix A

- What are the row vectors ? Shubham: The coefficients of the x and y in each equation forms row vectors.

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- What is the geometric meaning of $c_1 v_1 \uparrow + c_2 v_2 \uparrow$? Ans: Coefficients of a new line.

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- Example: Consider two line equations $x + y = 2$, $x - y = 4$. The intersection point is (3,-1).

- The line equation using suprposition and $c_1 = 2, c_2 = 1$ is $3x + y = 8$. Notice that the new line also passes through the same intersection point.

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- If the intersection point is (x_0, y_0) then the point lies on both the lines. $a_1 x_0 + b_1 y_0 - c_1 = 0$ and $a_2 x_0 + b_2 y_0 - c_2 = 0$.

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- Considering the superposition, LHS = $d_1(a_1 x + b_1 y - c_1) + d_2(a_2 x + b_2 y - c_2) = 0$ is satisfied by the same intersection point.