Examples 2.6: Matrix inverse

To find the inverse, use $RREF(A|I) = (I|A^{-1})$. The inverse of $A = \begin{bmatrix} 1 & 5 & 0 \\ 2 & 11 & 4 \\ 6 & 33 & 13 \end{bmatrix}$ is found by:

$$\begin{bmatrix} 1 & 5 & 0 & | & 1 & 0 & 0 \\ 2 & 11 & 4 & | & 0 & 1 & 0 \\ 6 & 33 & 13 & | & 0 & 0 & 1 \end{bmatrix} \xrightarrow{R_2 - 2R_1} \begin{bmatrix} 1 & 5 & 0 & | & 1 & 0 & 0 \\ 0 & 1 & 4 & | & -2 & 1 & 0 \\ 6 & 33 & 13 & | & 0 & 0 & 1 \end{bmatrix} \xrightarrow{R_2 - 2R_1} \begin{bmatrix} 1 & 5 & 0 & | & 1 & 0 & 0 \\ 0 & 1 & 4 & | & -2 & 1 & 0 \\ 0 & 3 & 13 & | & -6 & 0 & 1 \end{bmatrix} \xrightarrow{R_3 - 3R_2} \begin{bmatrix} 1 & 5 & 0 & | & 1 & 0 & 0 \\ 0 & 1 & 4 & | & -2 & 1 & 0 \\ 0 & 1 & 4 & | & -2 & 1 & 0 \\ 0 & 0 & 1 & | & 0 & -3 & 1 \end{bmatrix} \xrightarrow{R_2 - 4R_3} \begin{bmatrix} 1 & 5 & 0 & | & 1 & 0 & 0 \\ 0 & 1 & 0 & | & -2 & 13 & -4 \\ 0 & 0 & 1 & | & 0 & -3 & 1 \end{bmatrix} \xrightarrow{R_1 - 5R_2} \begin{bmatrix} 1 & 0 & 0 & | & 11 & -65 & 20 \\ 0 & 1 & 0 & | & -2 & 13 & -4 \\ 0 & 0 & 1 & | & 0 & -3 & 1 \end{bmatrix}$$

Examples 3.1: Graphing inequalities

If you were given O = (0,0), A = (0,6), B = (1,7), C = (6,2), D = (0,4), then you would be expected to give the equations of the lines **and** the inequality describing which side of the line the shape is on:

- OA is $x \ge 0$
- AB is $y \le x + 6$
- BC is $x + y \le 8$
- CD is $x \le y+4$
- DO is $y \ge 0$

Similarly given those inequalities, you would be expected to graph the lines, determine which side of the line the shape is on, and determines the corners of the shape, by finding the intersections of the lines.



Quiz on 3.1: Graphing inequalities

Graph the shape bounded by the inequalities: $x \ge 0, y \ge 0, x + y \le 7, y \le 5$. The corners are:

$$(\underline{\quad},\underline{\quad}),(\underline{\quad},\underline{\quad}),(\underline{\quad},\underline{\quad}),(\underline{\quad},\underline{\quad})$$



What are the **three inequalities** describing the shaded shape?

Activity 3.1a: Graph paper



Activity 3.1b: Graph paper

