Graph the following system of inequalities: $\begin{cases} x - 2y \le 3 \\ y > 3x - 4 \end{cases}$.

We will graph the inequalities separately and then see where they intersect – that intersection is the answer.
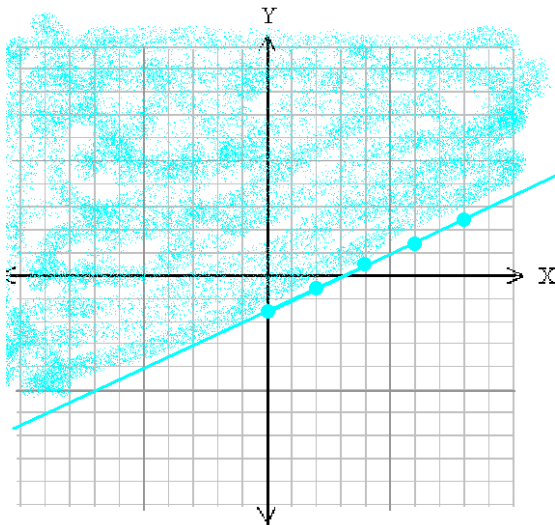
Step 1 – Graph the first inequality.

We could put in 0 for *x* and 0 for *y* to get the two points $\left(0, -\frac{3}{2}\right)$ & $(3, 0)$.

Or we could make the equation look like $y = mx + b$ like this…

$$x - 2y \le 3$$
$$-2y \le -x + 3$$
$$y \ge \frac{1}{2}x - \frac{3}{2}$$

The point $(0, 0)$ can be used to determine what side to shade. When we put in $(0, 0)$ we get that $0 \le 3$ or $0 \ge -\frac{3}{2}$, which is TRUE.
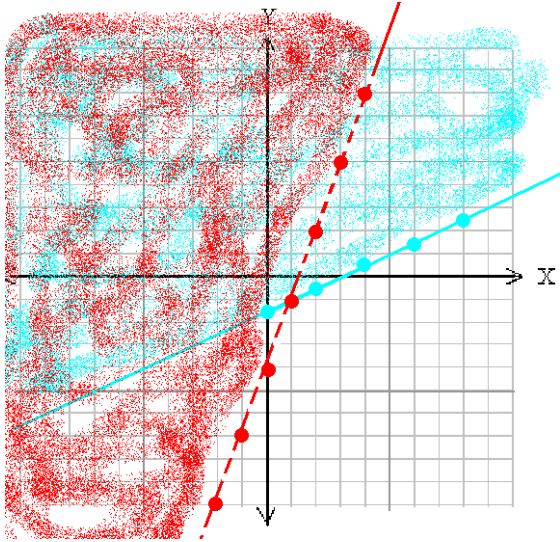
The graph looks like this…

Step 2 – Graph the second inequality

This one ($y > 3x - 4$)is ready to graph right now. When we try $(0, 0)$, we get $0 > -4$, which is TRUE.

We will put this on the same graph we were using in Step 1, and it now looks like this…

Step 3 – Make the intersecting area very dark as it is the solution! Any point In this region will work in both inequalities.