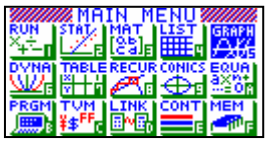
Exploring inequalities

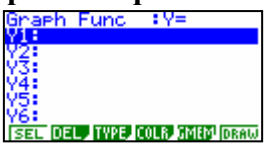
Select GRAPH icon (press 5) from the main menu or by using the arrow keys to highlight and then press EXE.



Symbols: < , ≤, >, ≥ can be used in drawing inequalities.

You can graph one inequality at a time or see them being drawn simultaneously. A useful tool to find 'extreme points' in (or on) a feasible region (boundary), to maximise (or minimise) the objective function.

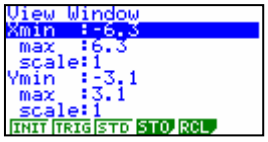
Setting up the inequalities:



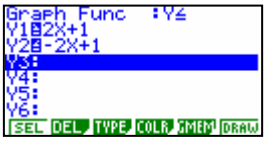
F3

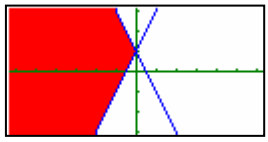
F6

A reminder about the V-Window to view the graphs

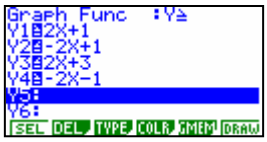


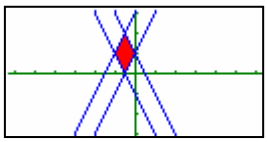
Example 1: Graph y ≥ 2x + 1 and y ≤ -2x + 1



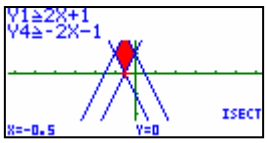


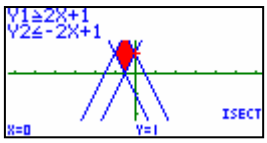
Example 2: Graph y ≥ 2x + 1, y ≥ 2x + 3, y ≤ -2x - 1 and y ≤ -2x + 1 and find the co-ordinates of the vertices

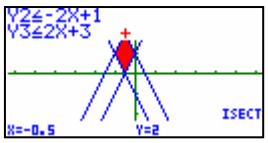


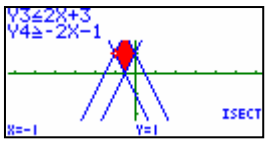


Now, use G-Solv Shift F5 and systematically find the intersection points of Y1 and Y2, Y1 and Y4, Y2 and Y3, Y2 and Y4.



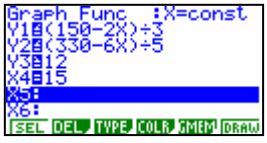


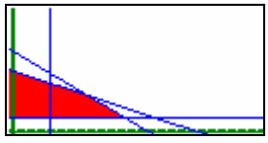


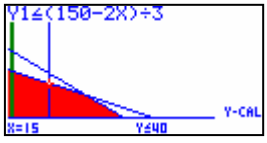


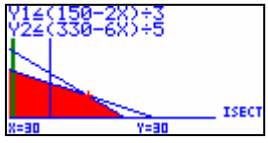
Example 3: Maximise the function F = 1.5x+1.3y over the region defined by
A linear programming problem for this situation has the following constraints:

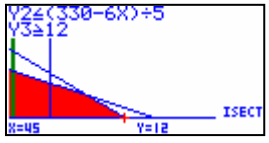
A: $2x + 3y \leq 150$ B: $6x + 5y \leq 330$ C: $x \geq 15$ D: $y \geq 12$











Vertices are at: (15 , 12) (15 , 40) (30 , 30) and (45 , 12)
F = 1.5×15+1.3×12 = 38.1 F = 1.5×30+1.3×30 = 84
F = 1.5×15+1.3×40 = 74.5 F = 1.5×45+1.3×12 = 83.1
Maximising the function F = 1.5x+1.3y occurs at the point (30 , 30)