Test on Thurs, review / practice test tmw

Linear Programming ← budgets, constraints

- peanuts are $3
- eggs are $7
- bread is $4

You have $25
what is optimal buy?

price × quantity

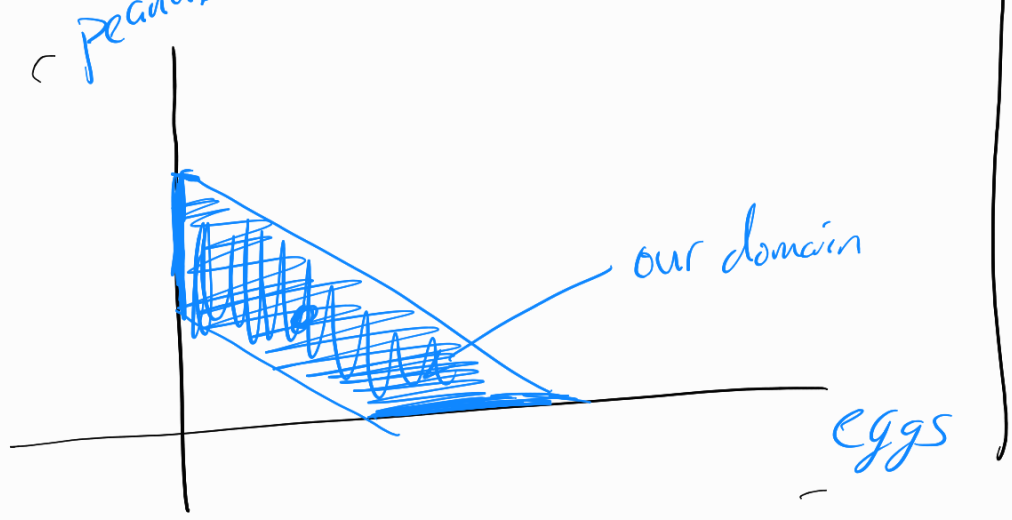
↑ how many ← use variable

Cost = $3p + 7e + 4b$

but cost ≤ 25

objects

Price

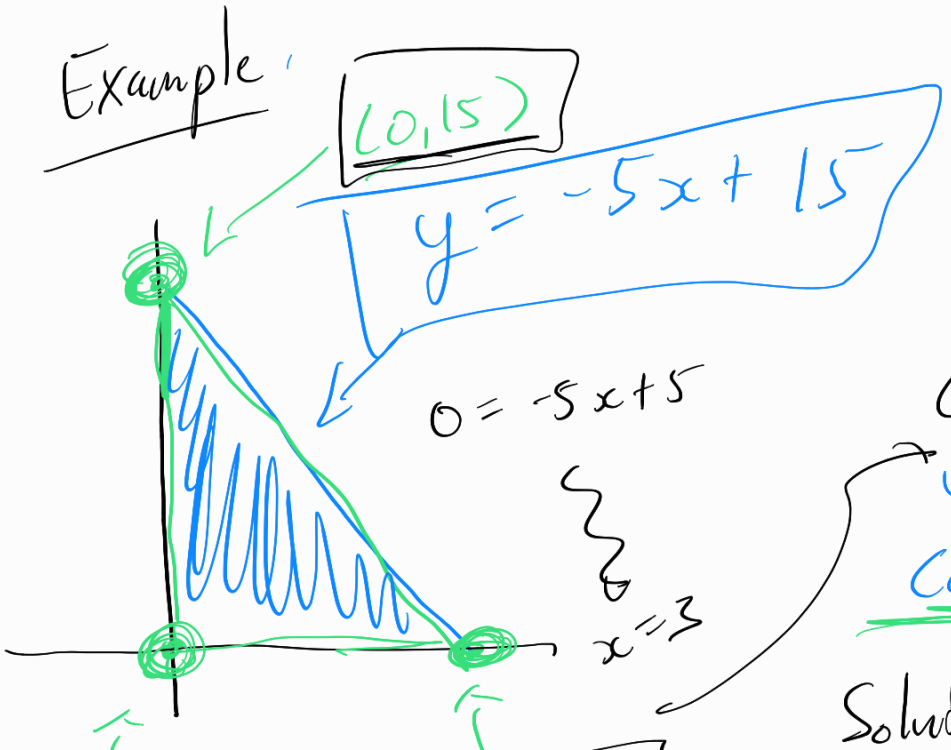


$3p + 7e$

"optimize"

Linear Programming states that optimal solution is on vertices of domain as long as domain boundary are all lines

Example:



cost is

$C(x,y) = 2x + 3y$

cost function

Solution. Find optimal

(0,0)

(3,0)

soln by identifying vertices

$C(0,15) = 0 + 3(15)$

$= 45$

Min is at (0,0)

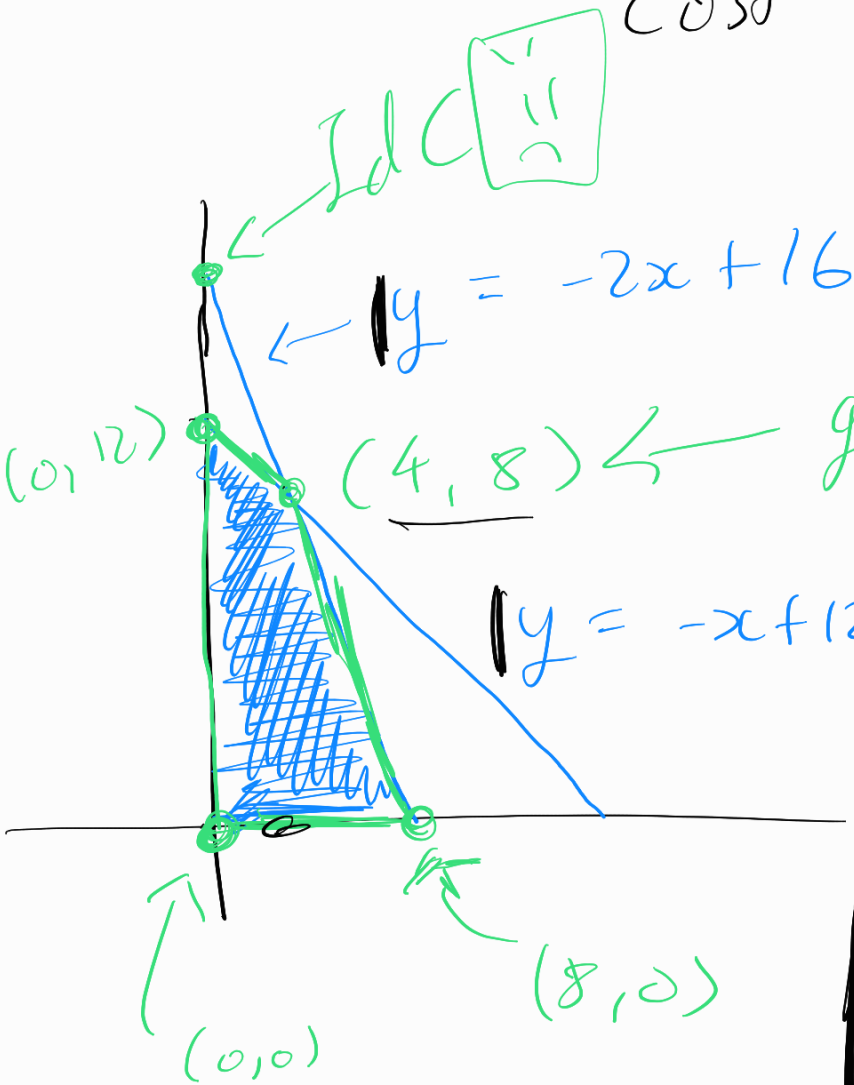
cost @ min is

$C(0,0) = 0$

$C(3,0) = 6$

Max is at (0,15)

cost @ max is 45



maximize cost if

$$Cost(x,y) = 3x + 2y$$

$Cost(0,0) = 0$

$Cost(8,0) = 24$

$Cost(0,12) = 24$

$Cost(4,8) = 28$

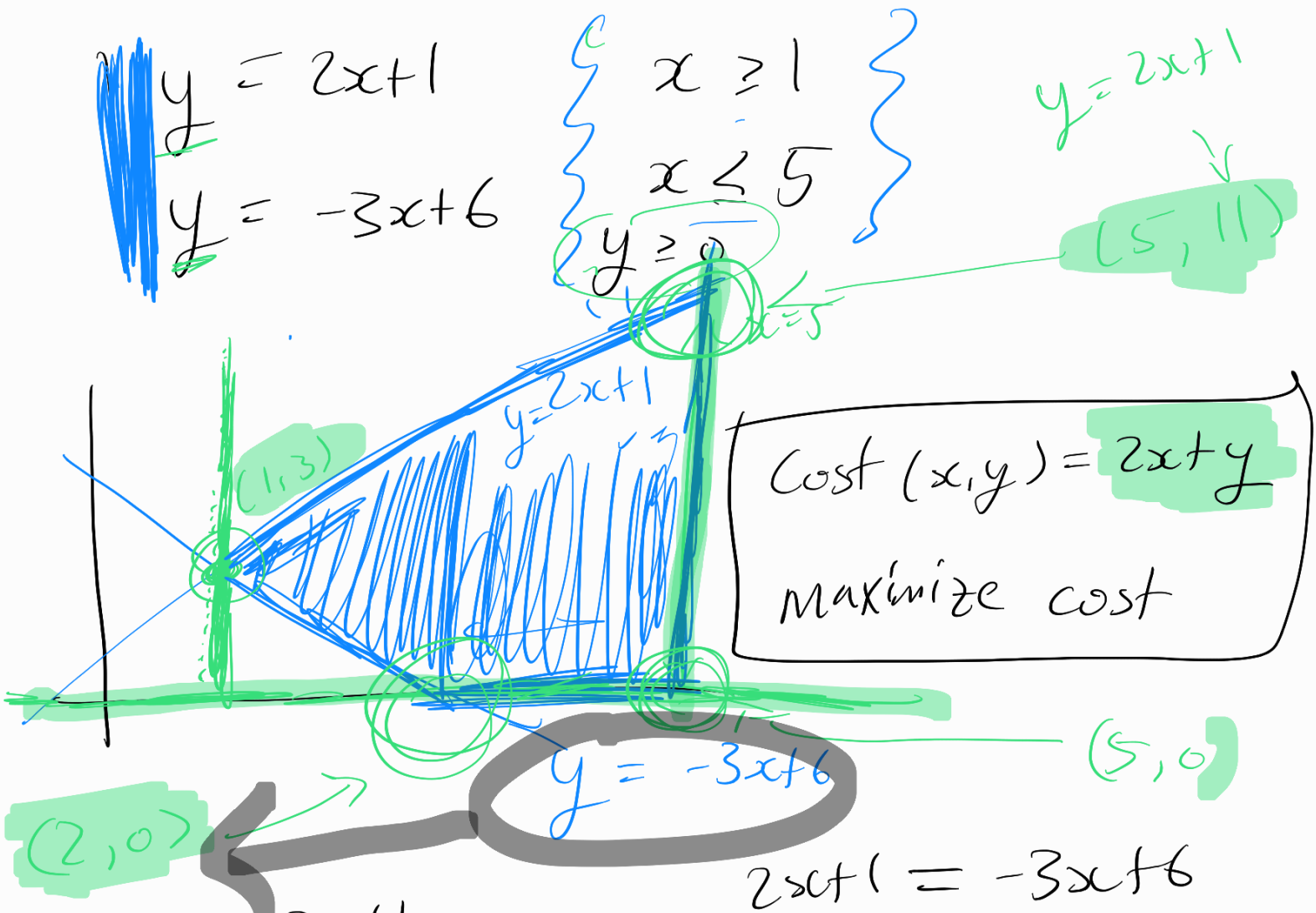
$y = 2x+1$

$y = -3x+6$

$x \geq 1$

$x \leq 5$

$y \geq 0$



$Cost(x,y) = 2x+y$

maximize cost

$2x+1 = -3x+6$

$y = 2x+1$

$y = -3x+6$

$\Rightarrow 5x = 5$

$\Rightarrow x = 1$

$\Rightarrow y = 3$ $(1,3)$